

April, 1959 Volume XX, No. 4

REHABILITATION LITERATURE

National Society for
Crippled Children and Adults

Review Articles

Book Reviews

Digests

Abstracts

Events and Comments

Rehabilitation Literature is intended for use by professional personnel and students in all disciplines concerned with rehabilitation of the handicapped. It is dedicated to the advancement of knowledge and skills and to the encouragement of cooperative efforts by professional members of the rehabilitation team. Goals are to promote communication among workers and to alert each to the literature on development and progress both in his own area of responsibility and in related areas.

As a reviewing and abstracting journal, *Rehabilitation Literature* identifies and describes current books, pamphlets, and periodical articles pertaining to the care, welfare, education, and employment of handicapped children and adults. The selection of publications listed and their contents as reported is for record and reference only and does not constitute an endorsement or advocacy of use by the National Society for Crippled Children and Adults.

The National Society for Crippled Children and Adults does not stock for sale publications indexed in *Rehabilitation Literature*. List prices and addresses of publishers are given for information only. Copies should be obtained directly from the publisher or through local bookstores. Known addresses of authors of periodical articles follow their names.

Books for review and correspondence relating to feature articles and other editorial matters should be addressed to the editor. He will welcome your suggestions.

REHABILITATION LITERATURE

CONTENTS

April, 1959, Volume 20, No. 4

	Page
Article of the Month	99
Physical Therapy for Motor Disorders Resulting from Brain Damage, by Sarah Semans, A.M., R.P.T.	
Review of the Month	112
Rehabilitation in Industry, edited by Donald A Covalt, M.D. <i>Reviewed by:</i> Earl D. McBride, M.D.	
Other Books Reviewed	113
Digests of the Month	115
<i>Recreation in Hospitals; Report of a Study of Organized Recreation Programs in Hospitals and of the Personnel Conducting Them</i> , by John E. Silson, Elliott M. Cohen, and Beatrice H. Hill <i>Published by:</i> National Recreation Association	
Chapter Five: Social Welfare, by J. H. Nicholson, Director of the Enquiry <i>In: Help for the Handicapped; an Enquiry into the Opportunities of the Voluntary Services</i>	
Abstracts of Current Literature	118
Events and Comments	128
Author Index	Inside back cover

Earl C. Graham, Editor
Published Monthly by
National Society for Crippled Children and Adults, Inc.
2023 West Ogden Avenue, Chicago 12, Illinois
Dean W. Roberts, M.D., Executive Director
Subscription rates: \$4.50 a year, United States; \$5.00 a
year, other countries. Single copy: 50c, United States;
60c, other countries.

Address changes must be received by the 10th of the
month to take effect the following month.

Second class postage paid at Chicago, Illinois.

Copyright 1959 by the National Society for Crippled
Children and Adults, Inc., Chicago.

The Psychologist and the Disabled Patient

"GROWTH OF INTEREST in the rehabilitation of the ill and injured has called for extension of training and research in medicine and its allied professions. Among the professions engaged in serving in the arena of rehabilitation services, psychology has made many fundamental contributions. Thus far the most predominant role of the psychologist has been that of applying empirically his knowledge of human behavior to the development of sound rehabilitation practice. It would seem that this is indeed proper behavior, since social, vocational, as well as emotional readaptations of the disabled patient call for the applied experience of the psychologist to help him overcome the difficulties associated with the patient's acceptance of himself and of his social milieu and in providing him opportunity for the attainment of a full measure of satisfaction.

"There is, however, a need to increase both the accuracy and extent of our knowledge with regard to what happens psychologically to the disabled patient. This can be accomplished only by improving the tools by which the psychologist measures the patient's capacities and his adaptability. This means that more and better research based upon the use and interpretation of valid, reliable measurements of these patients must be developed. Suitable criteria for successful outcomes of rehabilitation need to be established so that guesswork will be displaced by good prognostic devices that will aid not only in giving improved service to these disabled individuals, but in reducing wasted efforts to accomplish the impossible for those who are psychologically unable to make use of such assistance. This is especially important when we consider the fact that rehabilitation personnel and facilities are limited and that knowledge of the practical limits of rehabilitation efforts is important to patient and practitioner alike.

"The necessity of developing useful methods for making these prognostications has prompted me, in this paper, to be somewhat negativistic in stressing past research deficits and possible means of overcoming some of them. If the outcome is positive in the direction of improving the *status quo* the criticism that may result will be of little moment."—Morton A. Seidenfeld in "*Contributions of the Physical, Biological, and Psychological Sciences in Human Disability*," *Annals of the New York Academy of Sciences*, Sept., 1958, p. 85, New York Academy of Sciences, 2 E. 63rd St., New York 21, N.Y. \$3.50.

REHABILITATION LITERATURE

Article of the Month

Physical Therapy for Motor Disorders Resulting from Brain Damage

Sarah Semans, A.M., R.P.T.

About the Author . . .

Miss Semans has been instructor in physical therapy, School of Medicine, Stanford University, since 1952. She received her B.S. at Northwestern University and her A.M. at Stanford. For the period 1931-1947, she was a physical therapist at Spalding School for Crippled Children, Chicago, except for the years 1944-1946 when she served in the U.S. Naval Reserve.

This original article was written especially for Rehabilitation Literature.

Physical therapy procedures for neuromuscular disorders are in a process of transition. Since the 1930's, therapeutic exercise has come to be recognized as the most important part of physical treatment and prescriptions for "exercise" have increased while use of other physical measures such as hydrotherapy, massage, the various forms of heat, and electrotherapy has declined. With the development of a more dynamic concept of rehabilitation, the precept that what the patient does for himself is worth more than what is done to him gained wide acceptance and strongly influenced the type of exercise program devised. Such programs have tended to throw the responsibility for performance on the patient, the function of the physical therapist being to set tasks for the patient and to motivate and direct him. In other words, the patient was put to work with the therapist as foreman.

Patients not too severely involved seemed to do well on this type of program, but those whose difficulties were of such nature that they could accomplish little by their own efforts were classed as failures. In an analysis of 200 hemiplegic patients, Lorenze, DeRosa, and Keenan¹ attributed failures in achieving independent ambulation to the following conditions, in order of frequency: muscle weakness, atonicity or spasticity, poor motivation, and unrecovered balance, with agnosia, apraxia, and sensory and perceptual problems as less frequent contributing factors. Although less than half of the group were classed as failures, the analysis poses the question of what further could be done for these severely involved persons. Certain motor manifestations are characteristic of specific disease entities and brain damage, but similar problems may be encountered in patients with such varied diagnoses as adult hemiparesis (hemiplegia), cerebral palsy, multiple sclerosis, and Parkinson's syndrome.

A number of physicians and physical therapists, challenged by the difficulties presented by such patients, have devised means of what might be called a direct attack on malfunction in central nervous system dis-

ARTICLE OF THE MONTH

orders. Drawing from old and new knowledge in the field of neurophysiology, these investigators have developed working hypotheses and devised technics based on them. A review of some current approaches to the treatment of the brain-damaged patient by physical means will be attempted in this report. Before describing specific technics and discussing their application, it may be helpful to consider some pertinent basic concepts underlying normal and pathological motor function.

Basic concepts. Three concepts important in dealing with disorders in the coordination of motor function are: (1) the development and operation of the organism as a unitary reaction system; (2) the delicate balance between facilitatory and inhibitory influences necessary for normal function; and (3) the important role of sensation in the direction and control of movement and in motor learning.

The organism as a unitary reaction system is a concept derived both from embryology and from experimental study of peripheral mechanisms. A conflict between "holistic" and "heuristic" points of view in interpreting the development of the nervous system has gone on for many years.² A summary of the opposing viewpoints of Windle and Coghill on this subject is given by Grinker.³ The holistic point of view is that selective movement of individual parts is developed by a process of individuation and refinement of peripheral mechanisms from the total response of the primitive neuraxis. According to the other points of view, the monosynaptic spinal reflex (which was readily available to early experimental investigation) is considered as the functional unit of the nervous system. The complex forms of human motor behavior have accordingly been explained as increasingly complex interconnections and extensions of these basic functional units. Both phylogenesis and ontogenesis seem to favor the holistic point of view. The emergence of limb function, for instance, from fish through amphibian, reptile, quadruped, and primate forms to man, appears to be a successive differentiation of movement patterns from the total body response of the more primitive forms. This same process of emergence of more and more selective movement from a primitive total response can be seen clearly in the developing motor patterns of human infants as described by Gesell⁴ and by McGraw.⁵ This process continues into adult life in the development of skills as exemplified in the fingering of the expert violinist.

The necessity for interpreting all observable responses in terms of the organic whole and of their biological meaning becomes increasingly evident from recent experimental work in neurophysiology. Granit,⁶ for example, on the basis of his work with sense organs, conceives of the somatic sensory receptors as "measuring instruments" to supply information to the brain for guidance in driving the peripheral motor mechanism, including in the muscle the sense organs themselves. Small motor cells (gamma cells) in the spinal cord reflexly control the responsiveness

of the large motor cells by a circuit through the muscle spindle, the special sense organ of muscle. This is not just a spinal mechanism but part of the gamma system extending into brain stem and cerebellum. The function of this system, Granit concludes, is not only to improve performance of the sense organ (the spindle) but also to serve as a sort of ignition mechanism to initiate movement and to maintain tonus. The peripheral part of this system frequently is referred to as a servomechanism, again implying an intrinsic part of the whole.

Procedures for treatment are largely determined by the extent of recognition and acceptance of this concept of the organism as a whole. As Hellebrandt² has pointed out, many of our former re-education methods were based largely on the concept of separate functional units, for example, our methods of individual muscle re-education. Coordination exercises that carefully combine discrete movements as in the Frenkel type of exercises were also based on this outlook. Our preoccupation with the stretch reflex as a local manifestation in certain muscles is another example of the influence of the more circumscribed view in dealing with spasticity. Entirely different procedures follow, as will be seen, from a more longitudinal concept of nervous system function.

A helpful step has been progress in clarification of the concept of a reflex and its relation to the functioning of the total organism. This relationship may be most clearly defined by considering it as a "part-function" of the whole organism and not as an independent isolated functional unit. The character of a reflex response is precise, predictable, and stereotyped in pattern once it is elicited. It can be graded only quantitatively. As Ralston⁷ has pointed out, the term reflex is often loosely or incorrectly used. For instance, an automatic movement such as catching one's balance may include a number of integrated reflexes but should not itself be called a reflex. The term "postural reflex" encountered frequently in the literature leads to confusion as it is applied to a number of different mechanisms. Granit⁶ has shown that there are at least four specific reflexes involved in the stretch reflex of Sherrington. Although the stretch reflex has often been said to be the basis of postural control, Kelton and Wright⁸ concluded on the basis of electromyographic studies of standing posture in man that the muscular accommodation accompanying postural sway could not be explained by the stretch reflex. Muscle activity in postural control was activated with angular momentum less than that necessary to elicit stretch reflex by experimental means, even after facilitating by preliminary loading.

The tonic or "attitudinal" reflexes of Magnus appear as such only in pathological states approximating decerebrate rigidity. Although the laboratory animal may stand on his four rigid limbs, the balanced position is maintained mechanically rather than reflexly. The so-called righting

reflexes described by Magnus, though automatic and stereotyped in nature, involve a sequence of events in the trunk and limbs too complex to be called reflexes and might better be called reactions. Certainly the many and variable responses of the body musculature to shifts in the center of gravity in maintaining balance, requiring participation of the cortex in man, cannot properly be designated as reflexes. To what then does the term "postural reflex" refer? It is proposed that the Moro, or startle, reflex might be so designated. Seen in normal infants before it is inhibited, it is a total response of the body to physical insecurity. This response, biologically incomplete, might be considered the anlage of the equilibrium reactions in which selected musculature of trunk and limbs responds to maintain security of the body. If it can properly be called a reflex, the Moro response may correctly be called the postural reflex of primates. (This reflex will be referred to later in relation to treatment of cerebral palsy.)

Since analogies to modern machines are now popular in discussing nervous system mechanisms, one is suggested here in relation to the concept of reflexes. Rather than thinking of reflexes as a team of lively and headstrong horses to be harnessed, checked, and driven by the central nervous system, a more helpful analogy might be to consider them as parts of a machine, such as the ignition, engine governor, or automatic transmission, developed to increase the automaticity, refinement, and ease of control for accomplishing the purpose of the operator. It is only when there is a breakdown that the inner workings become apparent and the reflexes appear as independent functioning units. Granit warns against carrying analogies too far and counsels that experimental work should proceed from those primary processes that are known rather than be instigated in an attempt to prove some analogy. However, as therapists we are working from the other end and must deal with the end result of the organization (or disorganization) of all the processes. Since we cannot wait for a complete explanation we can only use what information is available to form working hypotheses. When there is a breakdown in the control mechanisms of the machinery, we as physical therapists are called upon to assist the patient in regaining what control he can with his remaining parts. Our most rational approach is to help him make connections in brain areas for again coordinating the distal machinery, whether it is running wild or has been brought to a standstill.

An important aspect of the longitudinal concept of the nervous system is the significant role of inhibition in the selective control of motor activity. As behavior evolves from the more organized, stereotyped patterns of lower vertebrates and human infants to the more variable and modifiable patterns that characterize volition movements of man, inhibition is an essential aspect of the change. All motor learning involves inhibition, whether it be in the

modification of the organized response of a laboratory animal in a maze, or the emerging of fine skills from gross movements in man.

Balance between facilitatory and inhibitory influences is an important concept basic to treatment. Magoun and Rhines⁹ located centers in the reticular formation of the brain stem for both facilitation and inhibition of on-going motor activity. Areas in the cortex, basal ganglia, and cerebellum discharge to these centers. Receiving excitatory impulses from various sources, these collecting centers, by processes of spatial and temporal summation, can effect a marked increase in the response of spinal motor neurones. Of special interest are the recent discoveries of how these controlling centers also operate through the gamma efferent system and muscle spindles to modify alpha-motor discharges, thus regulating the proprioceptive input.¹⁰ By means of two pathways, one fast and one slow, this gamma control from the midbrain reticular area is believed to serve both rapid movement and postural support. The slow path upon repeated stimulation responds in a recruiting fashion and has a long-lasting effect.

Mechanisms for facilitation to increase motor output by the patient have been widely utilized. As an example, Kabat¹¹ and the therapists working with him experimented with many types of sensory stimulation to mobilize these mechanisms and found proprioceptive stimuli to be most effective. They call their procedures "proprioceptive neuromuscular facilitation technics." A number of facilitation procedures and the ways in which they are used will be discussed in subsequent sections. When there is damage to areas of the brain that serve an inhibitory function there is a release of facilitatory influences seen clinically as hypertonus, hyperkinesia or dyskinesia, or a combination of these. Two effects of release from inhibition may be observed in patients. One is a specific effect that releases those mechanisms described above as "part-functions"; that is, spinal and tonic reflexes are no longer under control. The other is a nonspecific effect characterized by an exaggerated response to sensory stimuli. The latter effect might result from an imbalance of inhibitory and facilitatory influences exerted on proprioceptors or other sense organs by the nonspecific reticular system, described by Magoun.¹⁰

Inhibitory centers have proved less easy to activate by peripheral influences. Means of stimulating a central inhibitory mechanism would be most helpful in treating patients with an excess of postural tone or with hyperkinesia. Bobath and Bobath, who have stressed inhibition in treatment, believe that the results of their procedures are based on such a central mechanism of inhibition not as yet understood. By positioning the patient, with special emphasis on proximal parts, they utilize proprioceptive stimuli that come from all parts of the body at once. It is possible that joint receptors play a part as well as muscle and tendon receptors, but where or how in the brain they

ARTICLE OF THE MONTH

produce their effect is not known. In most of the other physical therapy procedures aimed at inhibition, an attempt is made to utilize reciprocal inhibition locally on the spinal cord level by stimulating the antagonist muscles. Rood, however, believes that her technic of stroking dermatomal areas produces inhibition, both directly and reciprocally, through brain mechanisms. Techniques of inhibition will be considered in more detail later.

The importance of the role of sensation in motor response and especially in motor learning is another concept in neurophysiology that has tremendous significance for physical treatment. The work of Granit⁶ and his associates on sensory perception is particularly illuminating. The manner in which outside influences are received by the sense organs and transmitted to the receiving centers in the brain explains how it may be possible to modify a response by changing the character of the message transmitted. From a discharging sensory receptor a message is transmitted by a frequency code, which is changed en route by the convergence upon it of frequency codes of other receptors. The message is thus organized into the pattern that is received and discriminated on the screen of the cortex. Many types of receptors are at our disposal through which we may immediately modify the ingoing message to change a response. Or we can furnish an experience made up of appropriate combinations of sensory information, which may be recorded in the brain as an engram and so stimulate learning. Such ready-made patterns of sensory experience are exemplified in the righting reactions as used by Bobath, the patterns of normally occurring limb synergies used by Knott, the organized synergies of the "primitive patterns" used by Fay, and the hemiplegic patterns used by Brunnstrom. Experiments of Hagbarth¹² on the cat have shown that spinal reflexes of flexion or extension may be facilitated or inhibited by adding tactile stimuli over various skin areas. Extensor muscles were facilitated from the skin directly over them and inhibited from other areas of the limb. Flexors were inhibited from the skin over the antagonistic extensors and facilitated from most other skin areas.

Rood¹³ has further explored this skin-muscle organization by applying tactile stimulation to skin areas of patients. As she suspected, she found the areas related to muscle according to their dermatomal representation. Here was a readily available means for facilitating desired muscle action. She has utilized this mechanism to influence both reflex and voluntary response in specific muscle groups. The technic she has found effective is brushing or stroking quickly over the appropriate skin areas to excite or facilitate a response in the corresponding muscles or to inhibit activity in the antagonists. To effect a voluntary response, these tactile impulses are, according to Rood's hypothesis, transmitted to the sensorimotor cortex via *nonspecific* pathways. This theory involves another concept, that of the role of ascending pathways through the

reticular formation in the central core of the brain stem for arousal of cortical areas. These are the same areas in the brain whose facilitatory and inhibitory influences on descending motor impulses have been described. This ascending pathway described by Magoun¹⁰ is called by him "extra-lemniscal" to distinguish it from the classically known pathway to the cortex via the lemniscus, which runs parallel and sends off collateral branches to it. Impulses traveling through the central core pass by way of multiple relays, according to Magoun, as shown by a long latency period. There results a long-lasting period of excitation, which does not of itself produce a motor response but rather constitutes a state of alertness and heightened responsiveness to stimuli carrying a specific message. Rood, accordingly, stimulates what she believes to be this pathway, first, by rapid dermatomal stroking. After this, a number of other types of sensory stimulation are used, producing effects from more discrete areas of skin, from muscle, bone, and joints. These combined stimuli are all applied before asking the patient to perform a voluntary movement.

It can be seen now that it is possible by utilizing various types of sensory stimuli to influence motor response by sensory impulses at spinal levels, at brain stem levels through the reticular facilitatory and inhibitory systems, and by sensation reaching the cortex through reticular ascending pathways. The latter, Magoun suggests, may serve to focus attention and reduce irrelevant sensation in voluntary movement. These nonspecific mechanisms are all in addition to pathways carrying specific information to the brain for guidance in volitional movement and for motor learning. The one system supports the other. Events taking place in the cerebral cortex are not as directly known as are the mechanisms by which sensations are transmitted and received. Since Pavlov's famous work on conditioning, interest has increased in regard to the formation of acquired circuits in the cerebral cortex believed to be associated with the learning process. Eccles¹⁴ in a nontechnical article has vividly portrayed in a diagram the possible courses of current flow through the activated cortical neuronal network. The current may flow off in main channels, circle as eddy currents, branch off as rivulets, which may or may not rejoin a stream and form a new channel. By visualizing the formation of circuits in the brain as pictured by Eccles, a therapist can conceive of the re-education process as consisting of activation, through sensory channels, of neuronal circuits corresponding with the approximate sensations of the movement and hope that the patient's attempt to move will result in the right chance meeting. The chances of a connection are increased by facilitation procedures that spread the excitation into more rivulets. But also one runs the risk of reinforcing an abnormal shunt through a primitive reflex pathway already established by the patient's unguided

effort to move. Bobath¹⁵ emphasizes the danger of the latter, while Brunnstrom¹⁶ stresses the advantages of increased facilitation. The amount of learning that has already taken place as contrasted in child and adult will also be a factor in selection of technics.

Increased understanding of the physiological mechanisms of sensation both on and below the level of consciousness and the role of sensory input in directing motor response should be of great value to the physical therapist. Such information provides a handle, so to speak, for effecting changes leading to more nearly normal and successful motor function.

Procedures available to the physical therapist. Before describing the manner in which specific procedures have been used, it may be well to survey those measures available to physical therapists for influencing the nervous system. The following outline includes some measures in common use and others yet to be explored. All (except drugs) are mediated through peripheral receptors in skin, joint, bone, or muscle.

A. Means other than movement

1. Heat—effects through autonomic nervous system
2. Cold
 - a. Sympathetic effect
 - b. Anesthetic effect
3. Rapid temperature changes—blocking effect by counterirritation
4. Equalization of temperature gradients—sedative effect
5. Sound
 - a. Ultra-sound
 - b. Conditioning by sound
 - c. Verbal commands—alerting and auditory cues
6. Light—alerting and concentrating attention by visual stimuli, visual cues
7. Touch
 - a. Discrete—specific effects
 - b. Diffuse—nonspecific effects
8. Pressure—exerted on bone, joint, muscle, and subcutaneous receptors
9. Insulation—avoidance of external stimuli
10. Tension
 - a. Stretch applied to muscle: fast, slow, or by constant loading
 - b. Traction applied to joint receptors
11. Electrical stimulation

B. Movement

1. Use of movement
 - a. Joint movement
 - (1) Without cooperation of patient—manipulation
 - (2) With cooperation of patient—passive, assisted, and resisted motion
 - b. Volitionally directed movement—assisted, resisted, or independent

c. Nonvolitional directed movement

- (1) Automatic—righting and equilibrium reactions, placing, stepping
- (2) Reflex
 - (a) Phasic spinal: flexor withdrawal, extensor thrust, crossed extension
 - (b) Tonic brain stem (effects used to facilitate movement): positive support, tonic neck, tonic labyrinthine, associated reactions
- d. Induced tonus changes—tendon stimulation (Kenny), tapping (Bobath), shaking, pounding, etc.
- e. Control and coordination of movements by patterning
 - (1) Partial functional patterns
 - (2) Total functional patterns

2. Prevention of movement

- a. Control bracing
 - (1) To restrict motion
 - (2) To position head, trunk, or limbs
- b. Drugs (prescribed as an adjunct to physical therapy)
- c. Inhibition by positioning or movement
 - (1) Of one reflex by another (reciprocal inhibition)
 - (2) By reversal of total abnormal pattern (reflex-inhibiting postures)
 - (3) Of tonus by rapid alternating movement (see B-1-d above)

Review of Current Physical Therapy Technics

In the following review, methods currently used in physical therapy to influence the central nervous system are grouped according to their general purpose: (1) to influence a specific muscle, muscle group, or joint action; (2) to influence a movement pattern; and (3) to influence the organism as a whole. (There is of necessity some overlapping since the effect of the procedure may be wider than intended or it may have a multiple purpose.) Procedures for the evaluation of patients are then reviewed briefly. Finally, some comments are made on choice of method.

1. Procedures to influence specific parts of the body.

A large variety of procedures are available for facilitation, and these seem to be most widely used to increase function locally.

Local facilitation technics. Rood has made a systematic investigation of sensory modalities and has developed a large number of technics. For local effects she uses cold stimulus and proprioceptive stimuli. To activate the diaphragm, an ice cube is applied briefly to the upper right quadrant of the abdomen; the area is blotted dry and the application is repeated two or three times at intervals of about ten seconds. This has a reflex sympathetic effect on

ARTICLE OF THE MONTH

the diaphragm intended to produce deeper and more regular respiration that helps in voice production. In the facilitation of voluntary muscle contraction, choice of the receptors is determined by the type of muscle involved. Rood classifies muscles as "light-work" and "heavy-work" muscles, said to correspond to white and red fibers and to innervation by fast and slow nerve fibers. The heavy-work muscles are those concerned chiefly in postural stabilization and facilitated by pressure receptors in muscle, joint, and bone and by stretch receptors in muscle. The activity of these muscles is facilitated by pressing or squeezing of the muscle belly, by pressure on the limb in such a way as to approximate the joint surfaces, and by pounding on the bone near the muscle insertion with the fleshy part of the fist or a sponge rubber ball. Stretch stimulus is more to be avoided than used in the presence of spasticity in muscles that are already hypertonic. The light-work muscles are chiefly concerned with rapid or fine movement and respond best to stimulation of skin exteroceptors.

Although skin-muscle organization may be integrated at the spinal cord level in the spinal animal, as shown by Hagbarth, it is long-circuited in man to the cortex by way of the nonspecific pathway through the reticular formation, according to Rood. Her method of stimulation is by rapid brushing on the skin 3 to 5 times per second for about 10 seconds over the area of the dermatomal distribution related to the muscle. This cutaneous stimulation may be repeated several times at intervals of about 30 seconds or interspersed with the proprioceptive stimulation described above. It may be recalled that a response through the reticular system is characterized by a long latent period, recruitment, and a long after-discharge. For this reason the response to brushing may not be as immediate as the proprioceptive response, but it lasts for a longer period. Also, since movements and not muscles are represented in the cerebral cortex, synergists and even contralateral muscles will be alerted as well. Accordingly, brushing or stroking is more often used to facilitate movement patterns than to activate single muscles. However, since many muscles have a superficial light-work portion and a deeper heavy-work portion, according to Rood, both types of stimulation are used when a movement produced by these muscles is desired. Brushing or stroking is done either with the hand or with a dry paint brush. A small brush or one finger is used for narrow areas; a fine stencil brush is used for the inside of the throat. In addition, in order to facilitate proximal fixator muscles such as those in the neck and shoulder girdle, Rood may use the resistance patterns described by Knott, tonic reflex patterns to increase tone in the muscles under consideration, or developmental patterns such as forearm support in the prone position.

Perhaps the best known of the facilitation technics are those first developed by Kabat,¹⁷ used and taught by Knott

and her co-workers, and described in detail in a recent book by Knott and Voss.¹⁸ Kabat was one of the first physicians in this country to use neurophysiologic principles extensively in this newer approach to physical treatment. He pointed out that "muscle re-education" was really neuromuscular re-education. Much of the early work of Kabat and his group was based on Sherrington's principles. Irradiation, recruitment, spatial and temporal summation, and successive induction were all utilized, along with various reflexes to increase central excitation. Maximal resistance to normal movement synergies in diagonal spiral patterns has now become the main feature of the technics. Various other means of proprioceptive stimulation may be combined with this procedure. It is well established that maximal load or resistance and maximal effort on the part of the patient are necessary to activate by natural means all the available motor units in a muscle. All muscle strengthening exercises are now based on this principle. The purpose of the maximal resistance as used here, however, is not primarily to strengthen muscle but to provide an adequate stimulus to activate dormant neurones and to facilitate their synaptic connections. They are thus made available to the patient for use in ordinary activities.

Kabat's use of movements involving synergic groups of the entire limb rather than single joint movements corresponds with the manner in which movements are represented in the cortex. Gellhorn's¹⁹ experiments in which he stimulated cortical areas in monkeys demonstrated this synergic organization and showed that proprioceptive stimuli applied to one part of the pattern would facilitate other parts of the limb synergy. This is borne out in treatment. If there is a response of any force in any part of the pattern, this is encouraged and utilized to facilitate weaker components of the pattern. The diagonal spiral patterns, which correspond to the natural movements of pulling, thrusting, striking, and so on, are based on the anatomic arrangements of muscles and joints involved in these motions. Only in these patterns, according to Knott, can the muscles be fully elongated and all parts of the muscle become activated.

Other means of facilitation routinely used in these pattern movements are stretch, pressure, joint traction or approximation, and verbal stimulus. Stretch is used at the start of the movement; pressure is provided by the grip of the therapist, which must be applied accurately on the part of the body surface that leads the movement, and the pressure must directly oppose the motion. Joint traction is used in conjunction with the flexion patterns and approximation with the extension patterns. Verbal cues are given vigorously to elicit maximal effort and to indicate the general direction of movement, but the accuracy of the pattern is directed proprioceptively by the pressure of the therapist's hands.

Depending on the condition and response of the patient, the type and sequence of contraction are varied from isotonic to isometric in various combinations, such as contract-hold, repeated contractions, contract-relax, hold-relax. Reversal of contraction utilizes Sherrington's principle of successive induction, or antagonist reinforcement. To facilitate individual components of the pattern specifically a technic called "timing for emphasis" is used. Here the usual sequence of the pattern from distal to proximal may be modified so that the weak muscle is called into action at the moment it is receiving maximal facilitation from its synergists. It is apparent that these technics require considerable skill and coordination of the therapist, who must continually adjust the applied stimuli to the response. When mastered, however, the patterns become automatic and the therapist adjusts proprioceptively to the patient's response. The use of reflexes proposed in the early theory of this system included stretch reflex, flexor withdrawal by the Bechterew maneuver (forcible flexion of great toe), tonic neck, and positive support response. These are little used in present practice. Voluntary response to stretch stimulus is believed to be more effective in initiating a pattern movement than is a stretch reflex. However, a stretch reflex or flexor withdrawal is used when contraction cannot otherwise be elicited. Other reflexes, symptomatic of brain lesions, are recognized as undesirable in that they inhibit normal movement and are avoided or inhibited.

Miss Semans' article has been reprinted and is available at 25c a copy. Please send payment with your order. Reprints of Dr. Usdane's article "Employability of the Multiple-Handicapped," from the January issue, can also be obtained at 25c a copy.

Perlstein, a number of years ago, observed the various associated reactions occurring in patients with cerebral palsy and catalogued them, calling them "synkinetic movements." Phelps observed the same phenomena and termed them "confusions." These have been widely used by physical therapists to elicit or reinforce muscle contraction in spastic cerebral palsy when the patient was unable to activate these muscles selectively. Some of these synergies are spinal reflex patterns (total flexion or total extension), some are tonic reflexes, some associated reactions, which Walshe²⁰ describes as tonic reflexes arising from receptors in the limb and acting upon the limb muscles, and some may be normal limb synergies, e.g., eversion with internal rotation of the hip. The value of those maneuvers that elicit a reflex pattern is doubtful. The inability of the patient to contract certain muscles selectively, to dissociate them from the abnormal reflex pattern, is very frequently misinterpreted as muscle weakness. The paresis is of move-

ment, not muscles, in motor disorders of cerebral origin, and coordination is the aim of treatment rather than strengthening of the muscles. To strengthen the very mechanisms that produce the incoordination would not appear to be a rational procedure. Although it may be desirable to direct impulses specifically into nonfunctioning or inhibited muscles, there are other methods available that do not at the same time facilitate abnormal reflex patterns.

In working with hemiparesis, Treanor²¹ observed the blocking effect of spastic patterns on individual joints of the arm and leg. He recommends procedures aimed at reversing these effects at the various joints. The recovery sequence described by Twitchell²² is followed. The hip and shoulder are treated in the first stage, then the knee and elbow, next the distal joints, and finally the "girdle joints." All available facilitation procedures are directed toward extension in the upper extremity joints and flexion in the lower. Procedures include the neuromuscular facilitation described previously. Reflexes are also utilized—asymmetrical tonic neck reflex for arm extension and pain stimulus for flexion of the lower extremity joints. Synkinetic movements are used to facilitate hip abduction and eversion of the foot.

Bobath has a method of proprioceptive stimulation that is used in connection with reflex inhibiting postures and in facilitation of balance reactions, but, since it is often directed toward control of individual joints, it will be described here. It is called "tapping" and consists of light rapid or slower heavy taps on the part with the hand, which produce joint movement in the direction of the muscles to be facilitated. Its purpose is to increase tone sufficiently to maintain a posture or joint position. In spastic patients, the muscle with low tone is first placed in its shortened range, which inhibits the spastic antagonist and the tapping is light and fairly rapid. In athetoids with low muscle tone or poor control in the middle ranges, and in ataxia, the tapping is slow and heavy and performed in either direction from a midposition. This is done alternately as required to control the posture or may be applied simultaneously from both directions "to steady fluctuating tone."

Brunnstrom²³ does a different sort of tapping with the finger to the muscle bellies of the wrist and finger extensors of a hemiparetic arm. This procedure is used to obtain a little extra facilitation in conjunction with an extensor synergy to open the hand. Another local procedure demonstrated by Brunnstrom is a pain stimulus produced by acute flexion of a middle interphalangeal joint, which serves to extend the other fingers.

Local inhibition procedures. In comparison with the many facilitation procedures few means of inhibition have been found. A number of workers have tried application of cold to inhibit spasticity and other states of involuntary

ARTICLE OF THE MONTH

muscle tension. Mead and Knott have demonstrated some methods of applying cold in treatment. Immersion of a spastic hand or foot in ice water produces a rather long-lasting relaxation of the immersed part. The pain stimulus, however, may increase the flexion proximally; this may be inhibited by cold compresses to the elbow flexors. Towels wrung from ice water are found to have a relaxing effect on spastic muscles and this procedure can be combined conveniently with stretching for tight hamstrings. Knott has demonstrated this combined procedure using one or more of the resistance technics. An interesting procedure that works equally well on nonspastic shortened hamstrings is to place the muscles in a fully lengthened position and ask the individual to contract them against maximal resistance, allowing no movement of the joint. Upon relaxation, increased range of motion is evident. Knott believes this to be due to an inhibition mechanism. Ralston, on the other hand, explains this phenomenon on a mechanical basis; since the muscle is not allowed to shorten, the contracting fibers stretch the elastic tissue elements within the muscle and permit increased joint range. Stroking over the muscle with an ice cube has been used by Rood to obtain inhibition.

The most common means of local inhibition is the use of reciprocal inhibition through facilitated voluntary action of the antagonist muscles. The underlying mechanism generally cited to explain this was described by Sherrington in relation to reciprocal innervation at the spinal level. Electrical stimulation of the antagonist of a spastic muscle has also been shown to relax the spastic muscle, presumably by spinal reciprocal inhibition (Levine, Knott, and Kabat²⁴). The sustained inhibitory effect of voluntary contraction in normal persons is no doubt supported from the reticular area, possibly through the gamma system. Magoun reports that recent experimental work indicates the reciprocal nature of responses from this area, but he does not indicate how this may affect voluntary movement. The delicate balance between reticular facilitatory and inhibitory effects is reflected in the ease and smoothness of normal alternate and reciprocal joint motion. In spasticity, reciprocal inhibition is more successful when contraction of the antagonist is produced by local reflex or by higher automatic response than when the stimulus arrives as a result of voluntary effort. The voluntary stimulus produced by effort is strongly supported by released lower brain stem facilitatory influences of tonic nature and results in co-contraction, which spreads throughout the limbs and trunk in typical patterns. These patterns resulting from effort in spastic states have been demonstrated by Walshe,²⁰ Simons,²⁵ and Brunnstrom.²⁶ They have been called "gross limb synergies"; when excitation results from strong effort in another part of the body they are called "associated reactions" (Walshe). These spastic patterns are very familiar but until recently have not been analyzed in relation to treatment. Reciprocal innervation is thus

covered up in spasticity as a result of voluntary effort. The greater the effort, the stronger is the co-contraction and the less likely is the achievement of isolated reciprocal joint movement. This result of effort is the reason given for the Bobaths' avoidance of voluntary effort in treatment. Rood's method of inhibition by cutaneous and pressure stimuli to the antagonists also avoids this effect of voluntary effort.

The inhibitory effect of slow stretching is satisfactorily explained by recent clarification of the lengthening reaction or clasp-knife phenomenon in spasticity. As Granit explains it, inhibition upon both the anterior horn cell and the spindle afferent from the Golgi tendon organ and possibly from myotube endings (secondary receptor endings into the spindle) break through the initial excitation of stretch and the tension is released. This mechanism operates initially in reflex-inhibiting postures as the limbs are positioned.

It is common experience that extensor spasticity is much easier to inhibit by positioning than is flexor spasticity. This has not been explained, but one factor may be the prepotency of the nociceptive spinal flexor reflex as related to its biological meaning in protecting the organism. Another factor may be the operation in the lengthening reaction of the myotube endings; their effect is said to be inhibitory on the extensors and excitatory on the flexors (Granit).⁶

One small maneuver that is very widely used but not well understood is the inhibition of finger flexion and pronation in a spastic hand by pulling the thumb outward, which allows opening of the hand. Children often do this themselves to enable them to grasp with the affected hand. Joint receptors may well be involved in this as in other positioning maneuvers. Further investigation regarding the role of joint receptors is indicated.

2. Procedures to influence a movement pattern

Facilitation. A number of basic procedures used to facilitate or to inhibit a movement pattern involving the entire limb have been described in the previous section. Those who use "proprioceptive facilitation technics" in the treatment of motor disorders of cerebral origin stress the importance of facilitating the pattern as a whole. Since the patterns are normal movement synergies, the pattern, when learned by the patient, can be carried over directly into functional activities. For those patients in whom hypertonus predominates, the pattern movements alone may be used without the additional procedures designed to increase tone. Here again it may be suspected that joint receptors play an important role in "learning" the pattern. In the case of parkinsonism the patterns are carried out in an easy, alternating rhythmical manner, since loss of automaticity in movement appears to be characteristic of these patients. In athetosis, resistance is applied through isometric resistance in the middle ranges, where control is

characteristically lacking. The progression in such cases is from resisted to easy and to free motion.

In treating hemiparesis Brunnstrom²³ has used the entire spastic limb patterns in the beginning, then has combined patterns, inhibiting parts of one by eliciting another to approximate normal functional movements. The typical extension synergy and two varieties of flexor synergies are used in the upper extremities. She apparently has not felt that strengthening of these synergies interferes with the recovery of selective movements. It may be that the inhibition involved in modification of the gross synergies is the significant factor in recovery.

Rood uses a sequence of the facilitation technics (described previously) applied in turn to each of the components of a functional movement pattern. These components are determined kinesiotically as fixators, prime movers, synergists, and antagonists. The appropriate facilitation is used according to whether the components are "heavy-work" muscles for support or "light-work" muscles for movement. Where co-contraction is needed for postural support, pressure pads are applied, for instance over the gluteus medius area or wherever there is a deficit of tone in the supporting musculature. It should be pointed out here that, when co-contraction occurs normally for postural support or for movement, the contractions in antagonist muscle groups are neither synchronously variable nor equivalent; they consist of a smooth play between taking up slack and paying it out. This is automatically controlled by the cerebellum. On the other hand, the co-contraction that is a symptom of spasticity lacks this control, so that antagonists contracting together put brakes on each other and movement is stopped until the stronger muscles win out.

Rood also uses developmental patterns to facilitate movement patterns. Noting the alternation and interweaving of total flexor and total extensor patterns that Gesell described in infant development, she uses these patterns to facilitate either flexion or extension. She believes facilitation of movement patterns should follow the normal sequence of flexion, extension, adduction, and abduction.

Bobath sometimes facilitates a movement pattern that appears to be confined to the lower extremities and lower trunk. That is the symmetrical movement of standing up from squatting, which involves simultaneous extension at ankles, knees, and hips. This movement with the normal accretion of tone required for it is facilitated in a small child by grasping beneath his arms and "bouncing" him on his flexed legs. The heels must strike the floor each time, otherwise one would stimulate the tonic positive support reaction, a most troublesome symptom of spasticity, which must be inhibited rather than facilitated. A similar procedure is used in adult hemiparesis for this purpose as well as for gaining balance. From a straight chair or stool, the patient is pulled forward onto his properly aligned feet and legs. The knees must be kept turned somewhat out-

ward to inhibit the positive support reaction. Balanced over his flexed legs, the patient is shifted over toward the hemiplegic side where the body weight facilitates the extensors. When this position can be controlled, up and down movements are made actively without allowing spastic extension.

Inhibition of patterns. Movement patterns that therapists have attempted to inhibit are the spinal flexor and extensor thrust reflexes and the tonic neck and tonic labyrinthine reflexes of the lower brain stem. In spasticity the spinal reflexes are augmented by released brain stem facilitatory influences that also add a tonic quality.

Therapists working with Kabat have used the flexor reflex to inhibit extensor spasticity in the supine position by the maneuver of sharply bending down the great toe (Bechterew). Treanor²⁷ has also used this procedure and in addition has designed a brace with a pinching device that produces a pain stimulus to elicit flexion at that point in walking when the positive support reaction should be inhibited. Fay²⁸ has also used the flexor reflex to inhibit extensor spasticity in the supine position. Instead of a pain stimulus, he reverses parts of the extensor pattern, which inhibits the whole pattern. This is done by turning the foot into dorsi-inversion, grasping the knee and outwardly rotating the thigh. The limb is then easily flexed, facilitated by the flexor reflex; this in turn is inhibited by eliciting an extensor thrust by pressure on the ball of the foot and tapping over the quadriceps. This inhibition of one reflex pattern by another is called "unlocking" reflexes. This process is repeated rhythmically many times with the idea of producing by conditioning a reciprocal pattern, thus combining the reflexes for locomotion. Fay also inhibits extensor patterns with the tonic labyrinthine reflex; this is done by placing the child prone, which facilitates flexor patterns. Phelps and his therapists²⁹ also developed this idea of "training reflexes" by conditioning as exemplified in "conditioned movements" with songs, familiar to all physical therapists. In some of these movements, the child's legs are placed alternately in flexor and extensor reflex patterns with the objective of "training in" reciprocation.

Bracing used extensively by Phelps' group has often had the objective of inhibiting tonic and spinal reflex patterns, although not designated as such, by restraint of these patterns. Brace locks oppose positive support reaction at the ankles; straps and twistors oppose the internal rotation component of this pattern. Arm braces and hand splints oppose the flexor patterns in the upper extremities, and head supports are used in an attempt to control neck reflexes as well as to support the head. It may be questioned whether restraining a reflex pattern is effective in inhibiting it, at least in spasticity, or whether it has the effect of strengthening it. Bobath's work has demonstrated that the patterns of spasticity can only be inhibited passively by the complete reversal of the strong proximal parts

ARTICLE OF THE MONTH

of the patterns. An aspect of Treanor's general plan of management of hemiparesis is of interest here in relation to the avoidance of activities that tend to increase spastic patterns. Walking is not encouraged during the period when extensor hypertonus is developing in the lower limb. Similarly, occupational therapy, which by stimulating grasp would tend to increase flexor hypertonus, is not permitted during the stage of gross limb synergy.

3. Procedures to influence the organism as a whole. Definitive physical therapy measures directed toward the entire nervous system as a functional unit include attempts to apply present knowledge of the integrative function of the brain. We are still a long way from understanding clearly what we are trying to do.

Rood's suggested approach to some problems in cerebral palsy via the autonomic nervous system warrants further study. Wang³⁰ points out that there is no fundamental difference between autonomic and somatic reflexes as far as the central nervous system is concerned. The same principles of central regulation govern both. Autonomic reflexes may be "released" or exaggerated along with somatic reflexes. For instance, a child exhibiting marked flexor and crossed extension reflexes, frequent startle response, and myoclonic seizures also has marked pupil dilatation, goose flesh, and gasping. This suggests that means of inhibiting or stimulating the appropriate autonomic reflexes might help restore balance. Rood reminds us of the possible use of warmth and rhythmical sensations for parasympathetic stimulation. She believes the effect of slow, light rhythmical stroking down either side of the spine for a few minutes at a time will relax the patient and diminish seizures.

At birth, the nervous organization of the baby with cerebral palsy may still be at a very premature level and parts of his brain structure still at a fetal stage of development. If so, the baby will be unable to respond adequately to the onslaught of new environmental stimuli. For this reason it might be well to provide a longer period of protection, prolonging the security of pressure against the body surface and rhythmical repetitive stimuli. More holding, carrying, patting, and rocking should be given than is needed by the normal infant in order to provide stimuli at a level to which he can adjust. Greene³¹ points out the importance of such trunk-centered perception for the normal child for the formation of body image and early object relationships. The baby with cerebral palsy needs more time to adjust to movement induced by being carried about and handled by others before having to deal with gravity on his own. With this type of early assistance and security the child might "get his balance" in relation to both somatic and autonomic nervous organization and thus be able to inhibit the startle response sooner. This response is always accompanied by a marked increase in spasticity that appears to be almost identical with it. McGraw has shown graphically how this response of insecurity is in-

hibited in normal infants. The drop in the curve of duration of this reflex coincides with the ages at which the equilibrium responses appear. This evidence supports the hypothesis that equilibrium emerges as an inhibition and reorganization of the startle reflex.

Fay³² has developed a unique system for coordinating movement of the body as a whole, which is familiar to many therapists both here and abroad. It is based on movement coordinations characteristic of the phylogenetically older brain. These represent functional movements completely organized and integrated from the highest level of the brains of lower vertebrates. Fay believes such patterns to be still latent in man as witnessed in ontogeny. He thinks they may be uncovered, strengthened, and used when the centers for the more variable coordination patterns are damaged. Although far from normal for man these "primitive patterns" are functionally usable. The child may be started with the earliest or homolateral pattern of limb coordination, the arm and leg of the same side moving together in a crawling movement. Progression is made through a contralateral pattern of crawling to quadrupedal creeping and thence to upright locomotion. The movements are rhythmical and smooth as they become automatic; the head leads the rotational movement of the trunk and the arms and legs follow with the thumb and great toe leading.

This method has been criticized on the basis that spinal and tonic reflexes are being elicited and strengthened when these constitute the very symptoms of spasticity that we wish to get rid of. It should be remembered, however, that freedom of movement and spasticity are inconsistent with each other and, to the extent that easy movement occurs, spasticity is diminished. In line with the concept of reflexes as "part-functions," discussed earlier, one may consider that, insofar as they are integrated into a total co-ordinated mechanism, they lose their identity as reflexes. Only when "released" pathologically or isolated under laboratory conditions may reflexes be identified as such. A movement such as paddling a canoe resembles anatomically the pattern of a tonic neck reflex, but the neurophysiological mechanism is not the same. As these crawling movements take place, they must inhibit the tonic reflexes in order for movement to be allowed. As Bobath has demonstrated, a child dominated by tonic reflexes is unable to balance on hands and knees, let alone creep. It is more likely that the neck and body righting reactions rather than the tonic neck reflex are operating in these primitive movement patterns.

In directing treatment toward the total functioning organism, Bobath has put great emphasis on the widespread effect of the tonic reflexes. These released bulbo-reticular facilitation mechanisms are held responsible for the hypertonus that prevents or distorts movements. Domination by these reflexes prevents the child's perception of

normal movement upon which motor learning depends. The cerebral palsied child is considered a "stunted" child whose problem is primarily motor learning. Similarly, the problem in the adult is one of relearning.

The precondition for motor learning is the elimination or reduction of this tonic reflex interference. The reflex-inhibiting postures were designed by Bobath to accomplish this wherever the influence of tonic reflexes appears. The abnormal postural patterns seen in patients were analyzed³³ and found to coincide with various combinations of the tonic reflexes described by Magnus³⁴ and the "associated movements" of Walshe.²⁰ They are most clearly evident in the severely involved patients. In moderate involvement the resulting patterns are modified by compensatory voluntary movement. Bobath observed that the hypertonus could be inhibited by positioning the patient in such a way as to fully lengthen the hypertonic muscles of the proximal parts of the pattern, *i.e.*, at joints near the trunk. By appropriate positioning the tonic patterns are broken up. Inhibition is maintained while graded proprioceptive stimuli are applied with the intent of "shunting" the excitation into the previously inhibited muscles. By upgrading the stimuli in the direction of normal functional movement, the patient is provided with the sensory basis for motor learning.

Righting responses^{33, 34, 35} that can be elicited in children and sometimes uncovered in adults are conveniently available as preorganized patterns of sensation. Equilibrium reactions³⁶ serve in the same way in the more mature nervous system. In infants and children the developmental level of the child is carefully analyzed and movements appropriate to that level are used for facilitation.

The whole field of the physiology of learning has far-reaching implications for treatment of the brain-injured. The analysis of perceptual and emotional disorders of the brain-injured child by Strauss³⁷ and his co-workers could be utilized to a greater extent in treatment of the related motor disorders. Ayres³⁸ has ably reviewed recent concepts of perception in relation to motor learning from the aspect of occupational therapy. Denny-Brown's³⁹ recent analysis of apraxia sheds light on many problems met with in physical therapy and suggests interpretations that enlarge the boundaries of our preconceived notions.

Evaluation of the patient. Many difficulties in this area can be attributed to lack of understanding and agreement regarding what we are trying to measure. Simplified achievement tests are of value in measuring and recording gross progress and for vocational planning. Jones⁴⁰ has prepared a battery of such achievement tests and a method of summary charting along with growth. They are of little help, however, in guiding specific treatment except to point out areas of needed emphasis, especially in the older child and adult. Such tests also have the disadvantage of providing no objective evaluation of the quality of movement that we are chiefly trying to influence by treatment.

Bobath has proposed an assessment chart designed specifically to test the quality of movement within a framework of developmental progression. An attempt is being made at present to develop and increase the objectivity of this test.

Arnott⁴¹ emphasizes the need for full assessment of the cerebral palsied child. This, he states, should include a motor assessment that shows the developmental stage of the child, together with intellectual, visual, and auditory assessment and determination of perceptual defects. Testing for the latter has recently been described by Hohman, Baker, and Reed.⁴² A standardized perception test to be used by physical and occupational therapists in conjunction with motor and achievement tests would be helpful. A progress report on the development of a motor test for adult hemiparesis by Reynolds and co-workers⁴³ appears promising. These investigators have demonstrated the in-

Dr. Glenn G. Reynolds, with the collaboration of Signe Brunnstrom, has written for Rehabilitation Literature a report, "Problems of Sensorimotor Learning in the Evaluation and Treatment of the Adult Hemiplegic Patient." This article is scheduled for publication in the June, 1959, issue of Rehabilitation Literature.

adequacy of the standard muscle test for evaluation of neuromuscular function in such patients. Physical therapists working with cerebral palsied children have also found that the conventional manual muscle test has little meaning.

Choice of treatment methods. Procedures organized in orderly sequence by their originators tend to be presented to members of the profession and accepted by them as an established system to be adhered to in every detail. They are usually designated by the name of the originator. The tendency of therapists to accept or reject such systems *in toto* is often deplored by physicians. The question put to a physician, "Do you want Rood or Bobath technics used on this patient?" can only distress the informed physician and annoy the uninformed. Such a question indicates the state of confusion of a therapist who has been introduced to several "methods." The challenge of such a question is certainly one that calls for increased understanding by the therapist of the underlying factors of the patient's problem and of the possible influence of available treatment procedures.

Those who have originated these approaches to treatment by observation, curiosity, and problem-probing—who have asked questions, sought, and proposed answers—should be emulated by all of us and our thinking should be stimulated. Their hypotheses, however, should be critically and experimentally examined, and neither blindly

ARTICLE OF THE MONTH

accepted nor chosen on the basis of mental or emotional bias.

Instead of using proposed new technics in a ritualistic fashion, or as set exercise routines, therapists should have these skills well mastered and at their fingertips, ready to use at the right moment to elicit or modify a response while helping the patient learn. All possible assistance is needed by the therapist from both basic scientist and physician in understanding the underlying mechanisms of behavior as well as the significance of the pathology in the treatment of the individual pupil-patient. It might be suggested here that the function of the therapist in this area is closer to that of a teacher than to a dispenser of a therapeutic agent.

In regard to the rationale of specific procedures, no manual of instruction could indicate when to use one and when another. The complexity and number of variables in the human nervous system is such that the critical influence that would produce the desired modification of response at a given moment is likely to be missed or neutralized by any attempt to apply an arbitrary list of procedures. Knott illustrates this point when she stresses the importance of timing and instant modification of procedure to meet the patient's response. Brunnstrom makes the same point when she speaks of "capturing" a reflex motion at the moment it coincides with a desired volitional movement. Rood and Bobath, when demonstrating technics on patients, show the necessity of waiting and watching to see what happens after applying a stimulus and of adding or subtracting accordingly. It was the keen and accurate observation of the patient's response and corresponding adaptation of procedure that was responsible for the excellence of the work in muscle re-education of such outstanding physical therapists as Wilhelmina Wright, Janet Merrill, Sue Roen, Alice Lou Plastridge, and Elizabeth Kenny. The therapist who treats neurological disorders must have sensitive hands, keen tactile and kinesthetic perceptivity, as well as curiosity and imagination.

References

1. Lorenze, E. J., A. J. DeRosa, and E. L. Keenan. Ambulation problems in hemiplegia. *Arch. Phys. Med. and Rehab.* 39: 366-370. 1958.
2. Hellebrandt, F. A. Physiology of motor learning. *Cerebral Palsy Rev.* 19: 9-14. 1958.
3. Grinker, R. R. *Neurology*. Springfield, Ill.: Charles C Thomas. 1937.
4. Gesell, A. G., and C. S. Amatruda. *Developmental diagnosis*. 2d ed. New York: Paul B. Hoeber, Inc. 1947.
5. McGraw, M. B. *The neuromuscular maturation of the human infant*. New York: Columbia University Press. 1943.
6. Granit, R. *Receptors and sensory perception*. New Haven: Yale University Press. 1955.
7. Ralston, H. J. Unpublished lectures. 1953.
8. Kelton, I. W., and R. D. Wright. The mechanism of easy standing by man. *Australian J. Experimental Biol. & Med. Sci.* 27: 505-515. 1949.
9. Magoun, H. W., and R. Rhines. *Spasticity: the stretch-reflex and extrapyramidal systems*. Springfield, Ill.: Charles C Thomas. 1947.
10. Magoun, H. W. *The waking brain*. Springfield, Ill.: Charles C Thomas. 1958.
11. Kabat, H. Studies on neuromuscular dysfunction XI; XII; XIII. *Permanente Found. Med. Bul.* Vol. 5, no. 3, Nov. 1947; Vol. 8, no. 1, Jan. 1950; Vol. 8, no. 3, July 1950.
12. Hagbarth, K. E. Excitatory and inhibitory skin areas for flexor and extensor motoneurons. *Acta physiol. scandinav.* 26: supp. 94. p. 1-58. 1952. Cited by Ralston, H. J. Recent advances in neuromuscular physiology. *Am. J. Phys. Med.* 36: 94-120. 1957.
13. Rood, M. S. Neurophysiological mechanisms utilized in the treatment of neuromuscular dysfunction. *Am. J. Occupational Ther.* 10: 4 Part II: 220-224. 1956.
14. Eccles, J. C. The physiology of imagination. *Scient. Am.* 199: 135-146. 1958.
15. Bobath, K., and B. Bobath. Control of motor function in the treatment of cerebral palsy. *Physiotherapy* 43: 295-303. 1957.
16. Brunnstrom, S. The use of associated reaction patterns in the training of adult patients with hemiplegia. *Proc. of 2nd Congress, World Confederation for Physical Therapy*, June 17-23, 1956. p. 55-61. Pub. by American Physical Therapy Association, New York, N. Y. 1957.
17. Kabat, Herman. Proprioceptive facilitation in therapeutic exercise, in *Therapeutic exercise*, ed. by Sidney Licht. Vol. 4 of *Physical Medicine Library*, Elizabeth Licht, Publ. Baltimore: Waverly Press. 1958.
18. Knott, M., and D. E. Voss. *Proprioceptive neuromuscular facilitation. Patterns and techniques*. New York: Paul B. Hoeber, Inc. 1956.
19. Gellhorn, E. Proprioception and the motor cortex. *Brain* 72: 35-62. 1949.
20. Walshe, F. M. R. On certain tonic or postural reflexes in hemiplegia. *Brain* 46: 1-37. 1923.
21. Treanor, W. J. Restitution of movement following brain injury. *Phys. Therapy Rev.* 34: 606-610. 1954.
22. Twitchell, T. E. Restoration of motor function following hemiplegia in man. *Brain* 74: 443-480. 1951.
23. Brunnstrom, S. Demonstration of techniques. *Second inst. on the correlation of physiology with therapeutic exercise*. Off. Voc. Rehabilitation—Am. Physical Therapy Assn., held at Norman, Okla., Apr. 16-20, 1956.
24. Levine, M. G., M. Knott, and H. Kabat. Relaxation of spasticity by electrical stimulation of antagonist muscles. *Arch. Phys. Med.* 33: 668-673. 1952.
25. Simons, A. Kopfhaltung und Muskeltonus. *Ztschr. f. d. ges. Neurol. u. Psycho.* 80: 499-549. 1923. Abstracted by S. Brunnstrom. *Phys. Therapy Rev.* 33: 409-419. 1953.
26. Brunnstrom, S. Associated reactions of the upper extremity in adult patients with hemiplegia: An approach to training. *Phys. Therapy Rev.* 36: 225-236. 1956.
27. Treanor, W. J., O. M. Cole, and R. Dabato. Selective reeducation and the use of assistive devices. *Phys. Therapy Rev.* 34: 618-625. 1954.
28. Fay, T. The neurophysiological aspects of therapy in cerebral palsy. *Arch. Phys. Med.* 29: 327-334. 1948.
29. Egel, P. F. *Technique of treatment for the cerebral palsy child*. St. Louis: C. V. Mosby Co. 1948.
30. Wang, G. H. The galvanic skin reflex: a review of old and recent works from a physiologic point of view, Part II. *Am. J. Phys. Med.* 37: 35-57. 1958.
31. Greene, W. A., Jr. Early object relations, somatic, affective, and personal: an inquiry into the physiology of the mother-child unit. *J. Nerv. and Mental Disease* 126: 225-253. 1958.
32. Fay, T. Neuromuscular reflex therapy for spastic disorders. *J. Fla. Med. Assn.* 44: 1234-1240. 1958.
33. Bobath, B. A study of abnormal postural reflex activity in patients with lesions of the central nervous system. *Physiotherapy* 40: 4 parts (Sept., Oct., Nov., Dec.). 1954.
34. Magnus, R. Some results of the physiology of posture. Cameron Prize Lecture delivered at the Univ. of Edinburgh,

May 19-20, 1926. Pts. I and II. *Lancet* 2: 531-536, 585-588. 1926.

35. Schaltenbrand, G. The development of human motility and motor disturbances. *A.M.A. Arch. Neurol. and Psychiatry* 20: 720-730. 1928. Byers, R. K. Tonic reflexes in children considered from a prognostic standpoint. *A.M.A. Am. J. Diseases of Children* 55: 606-742. 1938.

36. Weisz, S. Studies in equilibrium reactions. *J. Nerv. and Mental Disease* 88: 150-162. 1938.

37. Strauss, A. A., and N. C. Kephart. *Psychopathology and education of the brain-injured child; Vol. II, Progress in theory and clinic*. New York, Grune and Stratton. 1955.

38. Ayres, A. J. The visual-motor function. *Am. J. Occupational Ther.* 12: 130-138. 1958.

39. Denny-Brown, D. The nature of apraxia. *J. Nerv. and Mental Disease* 126: 9-32. 1958.

40. Jones, M. H. Appraisal of progress in the cerebral palsied child. *Proceedings, 4th Symposium on Cerebral Palsy* by the Research Council of the United Cerebral Palsy Associations, Inc. New York Acad. of Med. Nov. 15, 1952. Pamphlet pub. and dist. by U.C.P.A. of Los Angeles County.

41. Arnott, D. C. Cerebral palsy. *Annals Phys. Med.* 4: 219-236. 1958.

42. Hohman, L. B., L. Baker, and R. Reed. Sensory disturbances in children with infantile hemiplegia, triplegia and quadriplegia. *Am. J. Phys. Med.* 37: 1-6. 1958.

43. Reynolds, G., K. C. Archibald, S. Brunnstrom, and N. Thompson. Preliminary report on neuromuscular function testing of the upper extremity in adult hemiplegic patients. *Arch. Phys. Med. and Rehab.* 39: 303-310. 1958.

Occupational Therapy with the Hemiplegic Patient

"IN RETRAINING A PATIENT to do self-care activities, it is important to consider the following:

1. Group the teaching activities together. For example—don't have a patient demonstrate that he can tie his own shoe laces and then ask him to take off his socks.
2. Start at the patient's level. If the patient can obviously accomplish certain things, don't make him repeat these just for the sake of a test.
3. Be sure the patient could do the activity before the illness. One classic example is to try to teach a right hemiplegic (who has been right handed all his life) to write with his left hand, then discovering that the person never had any education and could not write even before the stroke.
4. Remember that sitting balance should be fairly good in order to achieve full dressing. Remember, too, even though a patient has learned to put on shirt and suit jacket, he still may not have success with an overcoat due to the heaviness of a coat.
5. Always find out the former hand dominance of the patient.
6. Make the patient's first attempt at dressing something easy in order to guarantee success.
7. If a patient can accomplish a task but it takes unusually long to do so, he needs more training or a self-help device to speed things up.
8. *All persons teaching activities of daily living must be able to do activity themselves quickly and easily with one hand—either right or left! ! !"*

—Margaret M. Bishop, O.T., Director of Occupational Therapy, Hospital of the University of Pennsylvania, in *Proceedings of the Third Annual Seminar in Cardiovascular Nursing: The Hemiplegic Patient's Journey Back*. 1958. Mimeo. Heart Association of Southeastern Pennsylvania, 318 S. 19th St., Philadelphia 3, Pa. 50c a copy.

Rehabilitation in Industry

Edited by Donald A Covalt, M. D.

Published by Grune and Stratton, Inc., 381 Fourth Ave., New York 16, N.Y. 1958. 154 p. illus., fig. \$6.00.

Reviewed by Earl D. McBride, M. D.

About the Editor . . .

Dr. Covalt is Professor, Department of Physical Medicine and Rehabilitation of New York University, and is Associate Director, Institute of Physical Medicine and Rehabilitation of the New York University—Bellevue Medical Center. As First Vice-President of the American Congress of Physical Medicine and Rehabilitation, he is a member of the Board of Governors of the Congress.

About the Reviewer . . .

Dr. McBride is Chief of Staff and Chief Surgeon of the Bone and Joint Hospital and McBride Clinic, established in 1919 in Oklahoma City. He is Clinical Professor of Orthopaedic Surgery at the Oklahoma University School of Medicine. His book Disability Evaluation is now in its fifth edition.

This little book of 154 pages contains more practical and useful information on the subject of rehabilitation and industry than many books of greater volume. The 11 chapters are contributed by different authors, each of whom has written clearly, precisely, and briefly on his particular subject. Technical details are omitted. Each chapter contains interesting and enlightening information without waste of words. Every industrial surgeon should thoroughly digest the contents of this book, since rehabilitation starts with the surgeon; this book will give the surgeon a quick review of what to expect from the rehabilitation department after he has completed active surgical care.

In the first chapter, "Early Referral" by A. Bernice Clark, M. D., the attitude the physician should have toward his industrial patient is clearly defined.

Chapter two, "Peripheral Vascular Disease" by Walter Redisch, M. D., contains the essential information on anatomy, physiology, pathology, clinical features, and management.

Chapter three, "Soft Tissue Injuries" by Samuel S. Sverdlik, M. D., clearly describes soft tissue injuries and their management in rehabilitation.

Chapter four, "Fracture Rehabilitation" by Hans Kraus, M. D., and Jessie W. Mahoney, M. D., contains useful information relative to therapeutic exercises, muscle strength, and joint function.

Chapter five, "Amputations" by Allen S. Russek, M. D., briefly describes the modern attitude, principles, and management of amputations from surgery through training and points out the latest developments in application of prostheses.

Chapter six, "Peripheral Nerve Lesions" by Joseph G. Goodgold, M.D., gives a very concise and complete picture of peripheral nerve management and the factors in the prognosis of such injuries that must be considered in vocational rehabilitation.

Chapter seven, "Management of Patients with Spinal Cord Injuries" by Donald A. Covalt, M. D., points out the more important requirements for first-aid and additional hospital management in respect to early exercise and advantageous bed handling of the paralyzed patient. Dr. Covalt illustrates clearly the methods of rehabilitation in early standing with tilt board, walking with braces and crutches, standing up from wheel chairs, stair climbing, and other aids to independence.

Chapter eight, "Head Injuries" by Morton M. Marks, M. D., reviews the various types of head injuries and treatment of the acute and chronic states and discusses problems arising with hemiplegia and aphasia. Dr. Marks clearly explains proper attitudes and steps in rehabilitation and treatment of the patient with spastic hemiplegia.

In chapter nine, "Back Injuries" by A. Bernice Clark, M. D., and Allen S. Russek, M. D., all the suggestions

for the examination and treatment of the back injury are very thorough, practical, and understandable and make for efficient rehabilitation.

Chapter 10, "Rehabilitation of Industrial Hand Injuries" by William T. Medl, M. D., and Bruce B. Grynbaum, M. D., points out essential procedures in the early management of hand and finger injuries with very concise and to the point suggestions on splinting, prevention of deformity, and rehabilitation of joint function and muscle strength.

Chapter 11, "Vocational Placement of Disabled Workers" by Martin E. McCavitt, Ed. D., should be read by every surgeon treating injured employees. Dr. McCavitt stresses the importance of evaluation of the injured worker and his job. He clearly explains the necessity of understanding the disabled man and his needs and of examining employment policies and attitudes.

This book is well written and well worthwhile.

Other Books Reviewed

286

The Anatomy of the Nervous System; Its Development and Function

By: Stephen Walter Ranson; revised by Sam Lillard Clark

1959. 622 p. illus. 10th ed. W. B. Saunders Co., W. Washington Sq., Philadelphia 5, Pa. \$9.50.

A comprehensive revision of a well-known text on the nervous system and the functional significance of neuroanatomy. Advances in the study of the relationship of structure and function are reported. Terminology adopted by the International Anatomical Nomenclature Committee in 1955 has been used wherever possible; terms for parts of the cerebellum have been varied from the list of the IANC to include studies by Larsell and others from a comparative and embryologic viewpoint. An extensive bibliography (p. 668-693) includes references to newer literature in the field, as well.

287

Heredity Counseling; A Symposium Sponsored by the American Eugenics Society. . .

Edited by: Helen G. Hammons

1959. 112 p. Paul B. Hoeber, Inc., 49 E. 33rd St., New York 16, N. Y. \$4.00.

Experts from a variety of disciplines participated in a symposium to discuss current knowledge on major problems of heredity in medicine and on the developing role of heredity counseling in guiding family planning. Divided into two main parts, the book discusses genetics in medical practice and the administration and procedures of heredity counseling services.

Contents: The need for parental counseling in pediatrics, Josef Warkany.—Genetics and dentistry, Carl J. Witkop, Jr.—Genetics in public health nursing, Hazel R. Dyson, Carl J. Witkop, Jr., and Shirley S. Butters.—Genetics in relation to cardiovascular diseases, Victor A. McKusick.—The structure of heredity counseling services, Lee R. Dice.—The meaning of empiric risk figures for disease or defect, James V. Neel.—Procedures for referral to heredity counselors, C. Nash Herndon.—Types of problems presented to genetic counselors, F. Clark Fraser.—Types of advice given by heredity counselors: I, Franz J. Kallmann; II, Sheldon C. Reed.—Discussions: Heredity counseling, Clarence P. Oliver, Harold F. Falls, and William J. Schull.

In most instances chapters are followed by bibliographies; an index is also included.

288

Recent Advances in Respiratory Tuberculosis

By: Frederick Heaf and N. Lloyd Rusby

1959. 284 p. illus., figs., tabs. 5th ed. Little, Brown & Co., Boston 6, Mass. \$8.00.

Because profound changes in the control and management of respiratory tuberculosis have occurred during the past 10 years, this edition has been completely rewritten, reflecting declines in mortality rates and incidence of infection. The authors present a review of all aspects of the subject—epidemiology, prevention, research, treatment, and rehabilitation. Chapter 11, on rehabilitation of the tuberculous patient, is written from the British point of view and describes various schemes for providing such services in Great Britain. The final chapter includes statistics and information on recent legislation in Great

BOOK REVIEWS

Britain. Each chapter is followed by a bibliography.

Printed in England and published by J. & A. Churchill, Ltd., 104 Gloucester Pl., London, W. 1, England.

289

Services and Programs for the Mentally Retarded, Physically Handicapped, and Chronically Ill in Texas

By: Texas Legislative Council

1958. 412, xxxiv p. charts, maps, tabs. Mimeo. Paperbound. (No. 55-3) Texas Legislative Council, P. O. Box 2056, Capitol Station, Austin, Texas.

This volume contains the basic research report and the report of the Council's Study Committee on State Services and Facilities for the Mentally Retarded, Physically Handicapped, and Chronically Ill. Estimates of the numbers to be served, the adequacy of present services, and unmet needs are summarized, followed by a detailed discussion of federal services and programs, services provided by the state, local, and private institutions and facilities, and the work of voluntary agencies and organizations. Problem areas are discussed, with suggestions for improvement of services. Presents a comprehensive picture of the current status of programs for the physically and mentally handicapped in Texas.

290

Speech Therapy; The Proceedings of the Workshop on Speech Therapy, conducted at Catholic University of America, June 13-24, 1958

Edited by: William T. Daley and E. Milo Pritchett

1959. 166 p. Paperbound. Catholic University of America Press, 620 Michigan Ave., N.E., Washington 17, D.C. \$3.25.

Attention of the Workshop was focused on speech therapy as an integral part of special education and rehabilitation programs. The first section of the book

is devoted to presentation of the main addresses; reports of four seminars for professional speech correctionists are given in the second half.

Contents: Speech problems in the classroom, Helen V. Hunt.—Group therapy in speech correction, Ollie Backus.—The chewing method, Emil Froeschels.—Therapy for stuttering, James I. Lore.—Speech for aphasoid children (Strauss syndrome), James C. Teegarden.—Speech after laryngectomy, Paul Moore.—Speech problems accompanying hearing loss, D. Robert Frisina.—Counseling in speech therapy, Rev. Michael J. O'Brien.—Summaries of seminars on: Organic speech problems.—Functional speech problems.—Speech problems due to hearing loss.—Speech improvement in the classroom.

291

Voice of the Deaf; A Biography of Edward Miner Gallaudet

By: Maxine Tull Boatner

1959. xii, 190 p. illus. Public Affairs Press, 419 New Jersey Ave., S. E., Washington 3, D.C. \$4.50.

In associating the name of Gallaudet with education of the deaf, there are two men who come to mind—Thomas Hopkins Gallaudet, founder of the first American school for the deaf in Hartford, Conn., and Edward Miner Gallaudet, his son, who founded Gallaudet College, the only school for the deaf on the collegiate level existing in the world. This biography of an equally illustrious son of an illustrious father begins with the early background of the family in the 17th century, Edward's immediate family background, and his life from childhood on. The author has intimate knowledge of the problems of the deaf, since she has taught at the New York School for the Deaf and at the American School for the Deaf in Hartford. Her talents as a writer and historian have resulted in a fascinating account of one who contributed greatly to the welfare of the deaf.

Cerebral Palsy in Texas

"A RECENT COMPREHENSIVE five-year study of cerebral palsy in Texas concluded that there are a maximum of 26,659 cerebral palsied persons in the State. . . . The prevalence rate was estimated to be 308 cases per 100,000 population, and the incidence rate was estimated to be 2.34 cases per 1,000 live births. Distribution by type of cerebral palsy as reported by parents was 42.7 per cent spastic; 12.0 per cent athetoid; 21.1 per cent ataxic; 1.3 per cent rigid; 0.8 per cent tremor; 4.8 per cent mixed, and 36.3 per cent unclassified. . . . The large majority, 90.4 per cent, of the cases included in the study were reported to be cerebral palsied at birth."—From *Services and Programs for the Mentally Retarded, Physically Handicapped, and Chronically Ill in Texas*. Texas Legislative Council. 1958.

Digests of the Month

Journal articles, chapters of books, research reports, and other current publications have been selected for digest in this section because of their significance and possible interest to readers in the various professional disciplines. Authors' and publishers' addresses are given when available for the convenience of the reader should he desire to obtain the complete article or publication. The editor will be most receptive to suggestions as to new publications warranting this special attention in Digests of the Month.

292

Recreation in Hospitals; Report of a Study of Organized Recreation Programs in Hospitals and of the Personnel Conducting Them

By: John E. Silson, Elliott M. Cohen, and Beatrice H. Hill

1959. 92 p. figs., tabs. National Recreation Association, 8 W. Eighth St., New York 11, N.Y. \$2.00.

The prolonged stay of an increasingly larger percent of patients, due to progress and life-saving in medicine, improved rehabilitation, and the older mean age of the patient, has enlarged the concept of recreation as an integral part of a hospital's over-all therapy program. A number of new organizations have developed in the field. Professional organizations include the Recreation Therapy Section of the American Association for Health, Physical Education, and Recreation, the Hospital Recreation Section of the American Recreation Society, and the National Association of Recreation Therapists. These three have formed the Council for the Advancement of Hospital Recreation as a coordinating body, with the National Recreation Association in a consulting capacity. The National Recreation Association, which provides consultation service in all types of recreation programs, developed a special unit under the direction of Mrs. Beatrice H. Hill, for recreation for the ill and handicapped. In the spring of 1956, the Council for the Advancement of Hospital Recreation proposed to the National Recreation Association that the Association undertake a study of recreation activities in the nation's hospitals, with emphasis on the number and types of programs and the personnel conducting them. A study staff was appointed with Mrs. Hill as coordinator and John E. Silson, M.D., M.P.H., as research consultant. An advisory committee was comprised of representatives from the Council's three member organizations, five universities with specific programs in hospital recreation, the American Psychiatric Association, the Veterans Administration, the U. S. Office of Vocational Rehabilitation, and the American Red Cross. The study was financed primarily through a special grant, assisted by contributions of personnel and facilities from the National Recreation Association. The study also attempted to get information on the need for programs where lacking and the need for expansion where already started and to estimate the size

and scope of the education programs necessary for future personnel requirements.

This pioneer study underlines the important role recreation plays in the total care of patients. In a sample of 3,507 hospitals responding to a questionnaire on programs (out of 6,776 queried), 1,486 (42.4%) indicated they maintained some sort of organized recreation program. Correcting for distributional factors and bias of nonrespondents, this would be about equivalent to between 1,500 and 2,600 hospitals in the entire country. Because of the higher percentage of organized recreation activities in the larger hospitals, those with programs apparently represent about three-fourths of the total hospital beds in the United States (confidence limits, 58 to 95%). The distribution of hospitals with programs appeared primarily related to length of stay of patients. State and V.A. hospitals, many devoted largely or exclusively to the long-term care of mental or tuberculous patients, were notably high in proportion of programs maintained. A far lower percentage of recreation programs was found among general hospitals handling mainly short-term patients, whether government, voluntary, or proprietary. Because of a relation between size and function, with chronic, long-term patients frequently concentrated in large institutions, it could be expected that organized programs would become more common with increasing size. No significant patterns in geographic distribution were noted. In most hospitals, participation was both voluntary and prescribed, indicating both need by the patient and recommendation by the physician.

Program content varied widely with type of institution and facilities and personnel. In general, smaller institutions with rapid patient turnover were limited primarily to passive mental and linguistic activities and arts and crafts, with occasional social functions. Only in large institutions with a high percentage of long-term patients were there extensive programs involving coordinated patient participation, such as active games and sports, service activities, and drama. Availability of facilities appeared to play a role, although many institutions used facilities not theirs when needed. A considerable number of personnel were engaged in carrying out the programs. In the 1,486 hospitals with programs, there were an estimated 5,236 full-time employees, 5,094 part-time, and 33,418 volunteers. (More than 30 percent of the hospitals had no full-

DIGESTS

time personnel, an additional 20 percent had only one person, less than one-fifth had over five full-term personnel.) Over half reporting a program had at least one person trained to supervise or lead a recreation program; in the others, activities were carried out by occupational and physical therapists, nonmedical librarians, and other paramedical technicians. Volunteers played varying roles in the program. In about half the institutions, personnel were directly responsible to administrators, in the remainder to persons scattered among all the services.

Characteristics of the recreation personnel were determined through a second questionnaire sent to administrators responding to the first questionnaire and answered by 1,968 persons in 495 hospitals (a return of 43.9 percent of the total of 4,479 receiving it). Hospitals represented were 34 percent of the 1,486 with programs responding to the first questionnaire. Since bias originates both in the hospital responding and the personnel cooperating, the enumerated characteristics are probably above average for the group. The highest percentage response was in the largest hospitals, particularly V.A. institutions. Over three-fourths of the respondent hospitals were general, but only 21 percent of the responding personnel were in general services—63 percent of the personnel dealt with psychiatric patients. Over four-fifths of respondents had titles as recreational personnel, although many were physical and occupational therapists. Over one-third classified their positions as directors and supervisors, and only about one-fifth of respondents were aides and other nonprofessionals. An average of three-quarters of their time was devoted to recreation activities. Respondents had spent a mean of 5.6 years in hospital recreation (in any institution), although the mean age was 37.4 years, indicating a high proportion came from other disciplines. Over half were males, and the great majority married. Less than half were licensed or registered. Only two-fifths were members of any professional organization in their field. Educational qualifications ranged from grade school level to master's degrees, about one-third not going beyond high school. Salaries ranged from under \$2,400 to over \$8,400, with a mean of about \$4,300, the mean for men being about \$700 higher than for women. There was a steady rise in mean salary levels with increasing educational qualifications.

The over-all picture of even this self-selected group is not one of very high professional status. Qualifications and functions vary widely, from the highly qualified director with a large staff to the relatively untrained assistant or aide. The result is a very diffuse characterization. Equally diffuse and vague is the role of the program and its personnel. Some administrators saw recreation only as a therapeutic tool in rehabilitation; others visualized it, either alone or in addition, as a means of providing for the well-being of the patient apart from prescribed therapy.

There was considerable vagueness as to its scope in the over-all program, especially as to the ill-defined boundaries between recreation and other paramedical activities, particularly occupational and physical therapy. More confusion has been added by newly developed specialized therapies within recreation, such as music and corrective therapy.

In the larger hospitals, particularly those devoted to mental and chronic disease, there is no doubt of the need for a well-organized recreation program under a trained professional staff. More information is needed on the qualifications of the personnel, facilities, and equipment necessary for an optimum program, and the proper relationship of staff size to patient load. The relationship to other paramedical therapies also needs clarification. In even the smallest hospitals, no matter how brief the average patient stay, some form of recreation program is needed. Program organization, extent, personnel, and supervisors are subjects for future exploration, as are training and qualifications of full or part-time personnel. More precise studies are needed. A field study of a small sample is needed, since a mail questionnaire is inherently biased in response and the understanding and attitude of respondents vary. A carefully designed and pretested schedule could be used by trained interviewers from information obtained from administrators and recreation personnel and from other staff members concerned with related activities and over-all patient care.

293

Chapter Five: Social Welfare

By: J. H. Nicholson, Director of the Enquiry

In: *Help for the Handicapped; an Enquiry into the Opportunities of the Voluntary Services*, p. 60-78. 1958. 114 p. (Ref. no. 528) National Council of Social Service, 26 Bedford Sq., London, W.C. 1, England. 7s 6d. Available in the U.S. from Albert J. Phiebig, Book Importers, P. O. Box 352, White Plains, N.Y. \$1.35.

As a senior almoner put it: "Partnership between statutory and voluntary bodies is the pattern by which England lives." The difference between statutory and voluntary work has in some ways become less marked. It was formerly common for legislation to follow where voluntary effort had found the way. This is still largely the case, but voluntary bodies have no monopoly in experiment: local authorities and other public bodies now have the power—and in many areas the will—to try out schemes for which there is no precedent, with the support and encouragement of the Ministry concerned. On their part, voluntary bodies rely increasingly on professionally trained staff and often on grants from the public authorities to pay their salaries. The voluntary body is still less tied than the statutory authority to regulations

that, however flexible, set limits. But provisions in trust deeds also may limit activities and make it difficult to adapt the work to changing needs. Apart from this, tradition dies hard: a long history can be a handicap as well as an inspiration.

It should not be assumed that voluntary service is less called for. But there has been a major change of emphasis. Financial aid to individuals can now be left to public provision—apart from certain special needs and cases. Medical treatment is the responsibility of the National Health Service. Personal service is now the main function of voluntary bodies in social welfare. The pattern of voluntary aid for the disabled varies widely from area to area. Finance and the shortage of trained staff limit the local authority, whatever its policy. Some use voluntary bodies as agents, in whole or in part. There should be a partnership between statutory and voluntary bodies in social welfare, based not on a division between them, but on mutual recognition of the part each can best play in local circumstances. The total need is greater than their combined resources can meet at present.

In the course of the survey reported here, 70 visits were made to voluntary associations and 35 to local authorities. No generalizations can be made of the volume of work or variety of views. Much the same problems recur. When there is conflict of view it depends on personal attitudes as well as administrative attachments. Almost everywhere it was agreed some voluntary work is needed. We observed an over-all shortage of professionally qualified staff. Appointment to posts requiring professional training of persons without it is to be deprecated. Although training, in the professional sense, is out of the question, a limited number of voluntary bodies provide short training courses for volunteers designed to fit them for appropriate duties. Two cautions are necessary: success depends on the careful selection of those accepted for training and the training must include a clear indication of the limits within which the "trained volunteer" must work. This is, nonetheless, not merely a stop-gap plan. It may well be that this limited use of trained volunteers should become an established feature of social welfare, relieving the pressure on professional staffs and giving a new direction to the urge to give voluntary service, which is characteristic of our society. Other forms of service such as the provision of transport are urgently needed but call for no special training, though even here an understanding

of the needs of those for whom they provide would be an advantage. The voluntary worker in a sense best represents the community from which the disabled long to feel still a member. Voluntary bodies and their workers can bridge an important gap—lack of information as to service available and contact with those who need the services.

In all fields of work for the disabled, the problems of the segregated (by disability) or mixed group calls for consideration. The burden of proof should lie with the advocates of segregation. When staff and accommodation are both short and expensive, careful assessment of relevant needs is particularly important and, when provision is made, there should be no vacant places. The mixed group is, anyhow, nearest to normal social grouping, and a group including both disabled and able-bodied might well, in some circumstances, be best of all. Removal from one's natural setting in the family and the local community involves, for many people, a sense of deprivation. When it is essential, everything possible should be done to minimize its effects.

"Work centres" now being established by certain local authorities are setting a new pattern—sometimes these are combined with homeworking schemes. Seemingly monotonous work seems more acceptable than craft work because it is much the same as normal factory work. A new approach to the problem of handicrafts is called for. The initiative of the Joint Committee of the Order of St. John and the British Red Cross Society and the Central Council for the Care of Cripples is to be welcomed. They are considering this problem with the help of Ministry representatives and commercial and other experts. The ideal solution might well be a nonprofit-making company to market the goods through trade channels on their merits.

Two strands—benevolence and self-help—are interwoven in the British social tradition. Both find expression in voluntary social service. The natural desire to "run one's own show" should be compatible with readiness to accept professional advice on technical matters, and the best leadership available in matters of policy and administration. Voluntary service is most effective when it has a recognized status and function. Its flexible approach to problems is especially valuable in a time of change.

(For a description of the scope of the survey and of the complete report, of which this is but one chapter, see #339 this issue of Rehab. Lit.)

Abstracts of Current Literature

This abstracting section, together with other numbered references indexed in this issue, serves as a supplement to the reference book *Rehabilitation Literature 1950-1955*, compiled by Graham and Mullen and published in 1956 by the Blakiston Division of McGraw-Hill Book Company, New York. An author index will be found on the last page of the issue.

ARCHITECTURE—BIBLIOGRAPHY

See 318.

ART

294. Dauterman, William L. (*Texas Technological Coll., Lubbock, Tex.*)

Aesthetic considerations in the rehabilitation of the blind. *New Outlook for the Blind*. Feb., 1959. 53:2:61-65.

A report of an experimental project for the enrichment of aesthetic, social, and educational opportunities for blind adults who were vocational rehabilitation clients at the Kansas Rehabilitation Center for the Blind. A collection of art objects and nature items was used to show blind clients that beauty could be appreciated through tactual exploration. One of the most important results of the experiment was felt to be the effect it might have in breaking down resistance of blind persons toward using their hands to see the physical environment. Methods found effective in stimulating emotional and intellectual involvement of blind clients in the project are discussed.

295. Dell'Acqua, Umberto (*City Health Dept., Milan, Italy*)

The social and professional integration of handicapped adolescents. *Internat. Child Welfare Rev.* 1958. 12:3:125-127.

Describes experimental research undertaken in Milan with handicapped boys to determine their possible artistic ability, with the thought that they might be guided into professions within their ability to perform. In addition to arousing artistic interest in the handicapped adolescents, trips to art galleries resulted in more social integration, better public understanding of the handicapped, and more active participation of parents.

AUDIOMETRIC TESTS

296. Lehrhoff, Irwin (436 N. Roxbury Dr., Beverly Hills, Calif.)

An experimental study of auditory threshold acuity in children with cerebral palsy by PGSR and other techniques. *Annals Otol., Rhinol., and Laryngol.* Sept., 1958. 67:3:643-654.

Because of considerable interest in the use of psychogalvanic skin resistance audiometry in testing the hearing of infants and young children, the author attempted to determine the validity of this type of audiometry, especially with cerebral palsied children. Auditory thresholds of cerebral palsied and control groups of children were compared by pure-tone and PGSR audiometry; all those tested had normal hearing. Equipment and procedures of the testing situation are described. A close relationship between auditory thresholds of normal hearing children and

normal hearing cerebral palsied children was found by methods of PGSR and pure-tone audiometry. The galvanic skin response did not yield valid and reliable results with the cerebral palsied children in this study. PGSR audiometry does introduce an objective element into the testing of auditory threshold acuity of cerebral palsied children but does not solve all the problems; it should be used as an aid to other testing procedures, case history, and observation.

297. Rubin, Wallace (1011 American Bank Bldg., New Orleans, La.)

Basic hearing tests and information they reveal. *A.M.A. Arch. Otolaryngology*. Sept., 1958. 68:3:337-341.

Although current otologic and audiologic literature gives the impression that accurate diagnoses can be achieved only through the use of expensive equipment and complicated hearing tests, the author demonstrates how the average otolaryngologist can evaluate adequately the majority of hearing problems without the aid of outside help. Accurate observation combined with knowledge of simple pure-tone and speech tests, using tuning forks and any commercial audiometer, will result in proper diagnosis of hearing loss. Described are types of information desired for determining diagnosis, various simple tests to be employed in the physical examination, and their objectives.

BLIND—PSYCHOLOGICAL TESTS

298. Dishart, Martin (*Columbia Lighthouse for the Blind, 500 Ninth St., S.W., Washington 24, D.C.*)

Testing the blind for rehabilitation, using a psychological profile. *New Outlook for the Blind*. Jan., 1959. 53:1:1-14.

Describes a psychological testing program that combines both quantitative and qualitative evaluations of the testee. The Psychological Profile was designed to aid vocational rehabilitation counselors through individual testing of the client, provision of a basis for comparison with norms for the sighted, and the provision of a form that the counselor can clearly understand. It is not only useful in interpreting and explaining the client but offers information to help the client reach maximum employability. In conclusion the Psychological Profile of an actual case is given; testing was in four areas for intelligence, emotional factors, manual dexterity, and school achievement. For further information on the Profile or the General Form for other disabilities, write the author (address above).

BLIND—RECREATION

See 304.

BLIND—SPECIAL EDUCATION

See 294.

BRAIN INJURIES—SPECIAL EDUCATION

299. Columbus State School

Teaching devices for children with impaired learning; a study of the brain-injured child from Research Project 50 at the . . . by Helen O. Epps, Gertrude B. McCammon, and Queen D. Simmons; ed. by Ruth Melcher Patterson. Columbus, Ohio, The School, 1958. 81 p. illus.

Believed to be the first manual written specifically for the use of teachers dealing with children who are mentally deficient as a result of brain injury, this booklet represents five years' experience in applying and expanding ideas gained from Dr. Lise Gellner during a research project conducted at Columbus (Ohio) State School. All three authors are teachers. Practical teaching methods and materials found useful in education of the brain-injured are discussed fully; methods are adapted to the particular type of handicap exhibited. A scheme is given for classifying these children into four major groups according to performance and behavior patterns. Chapters discuss materials useful in developing sensory perception, discrimination, and recognition; technics for observing and developing motor coordination; classroom methods for encouraging social perception and emotional development; and the use of constructive materials and musical activity as teaching tools. Methods for teaching number concepts, reading readiness, and writing are also included. A discussion of classroom equipment and sources for obtaining, class scheduling, a glossary of terms used in the booklet, and an index add to the practical value of the publication.

Available from Dr. Ruth M. Patterson, Director, Research Project #50, Columbus State School, 1601 W. Broad St., Columbus 16, Ohio.

BRAIN INJURIES—SPEECH CORRECTION

300. St. Onge, Keith R. (728 Washington St., N.E., Albuquerque, N. Mex.)

The brain stem damage syndrome; speech and psychological factors, by Keith R. St. Onge and James J. Calvert. *J. Speech and Hear. Disorders*. Feb., 1959. 24:1:43-50.

Experiences with five patients with brain stem damage who were referred to the Speech Section of the Department of Psychology, V.A. Hospital, Albuquerque, are reported. Medical management, which involves use of tracheostomy to cope with respiratory problems, interferes with normal speech production. Tube feeding necessary during the acute stage of brain stem injury denies the patient the normal oral exercise for regaining articulatory function. Speech in this series of patients was often partially or totally absent; all showed difficulty in reintegrating behavior post-traumatically, two patients to a marked degree. Significant psychological manifestations appeared in several patients during the recovery phase; the psychotic condition was usually transient. The role of the speech and hearing therapist and the psychologist in the treatment of these patients was considered as well as the optimal time for introducing services to patients.

CEREBRAL PALSY—DIAGNOSIS

See 296.

CEREBRAL PALSY—SPECIAL EDUCATION

See 314.

CEREBRAL PALSY—SPEECH CORRECTION

301. Plotkin, William H. (7529 N. Sheridan Rd., Chicago 26, Ill.)

Situational speech therapy for retarded cerebral palsied children. *J. Speech and Hear. Disorders*. Feb., 1959. 24:1:16-20.

An article adapted from a paper presented at the 1958 convention of the American Speech and Hearing Association. Speech training for mentally retarded cerebral palsied children becomes meaningful, the author believes, only when communication is the main goal and speech correction is subordinated. The program as described is based on adequate use of recreational therapy, physical therapy, arts-crafts, and occupational therapy. The speech therapist does not carry on much individualized therapy as such but makes himself a part of the over-all daily training program. The speech program does not amend or correct accepted therapeutic methods used with educable cerebral palsied children but utilizes technics valid for the situation; it has been formulated during two years' work in a training center and will continue to be modified as the need arises.

CEREBRAL PALSY—STUDY UNITS AND COURSES

302. United Cerebral Palsy Association, New York (City) (321 W. 44th St., New York 36, N.Y.)

Seminars on cerebral palsy for nurses. New York, The Assn. (1959). 12 p. (Program bul. no. 12)

Designed to aid in the planning and execution of professional seminars on the role of the nurse in the care of the cerebral palsied child, areas of responsibility, and co-operative efforts in the community, this bulletin suggests possible topics for discussion, methods for their presentation, and administrative details of program planning and organization. Material is based on experiences of several nursing groups and United Cerebral Palsy affiliates in various parts of the country in conducting pilot seminars in both rural and urban areas. Available from the Association on request.

CLEFT PALATE—SPEECH CORRECTION

303. Sherman, Dorothy (Speech Clinic, East Hall, State Univ. of Iowa, Iowa City, Iowa)

Glottal stops in the speech of children with cleft palates, by Dorothy Sherman, Duane C. Spriestersbach, and J. Douglas Noll. *J. Speech and Hear. Disorders*. Feb., 1959. 24:1:37-42.

Reports a study of the speech of children with cleft palates as compared with that of children with functional misarticulations, especially in regard to conspicuousness of glottal stops. From frequency counts based on phonetic transcriptions, it was found that glottal stops occurred more often, on the average, in children with cleft palates. Defectiveness of articulation was rated more severe, on the average, in the cleft palate group. The presence of hypernasality in the speech of those with cleft palates influences judgments of defectiveness of articulation.

CONVALESCENCE—RECREATION

See 292.

ABSTRACTS

DAY CAMPING

304. Glass, Robert (*Bronx House Community Center, 990 Pelham Parkway S., Bronx 61, N.Y.*)

Report of an integrated day-camp program. *New Outlook for the Blind*. Feb., 1959. 53:2:55-57.

Guild Institute: IV.

In the September, 1958, issue of *New Outlook for the Blind* three papers on the values and problems in segregated and nonsegregated settings in the early education of the blind child were given (see *Rehab. Lit.*, Nov., 1958, #1259). This article is the fourth paper from the Third Institute of the Recreation and Social Service and Groupwork Department of the New York Guild for the Jewish Blind, held in 1958. Mr. Glass discusses an integrated camping program held in 1957, the reactions of both sighted and blind children to the experience, and the gains cited by parents.

DEAF

305. Williams, Harold N. (*Augusta Speech and Hearing Center, Augusta, Ga.*)

Communicating with the acoustically handicapped. *J. Rehab.* Nov.-Dec., 1958. 24:6:14-15, 17.

Technics useful to the counselor in interviewing, counseling, and guidance of deaf and hard of hearing clients are discussed. Mr. Williams states that the suggestions made in this paper are contained in a publication of the American Hearing Society, issued in 1956 under the title of *Orientation Training for Vocational Rehabilitation Counselors; A Syllabus on Special Problems of the Deaf and Hard of Hearing*. . . (For annotation, see *Rehab. Lit.*, Apr., 1957, #457.)

See also 291.

DEAF—SPECIAL EDUCATION

306. Van Wyk, Mary K. (*Ft. Lauderdale Oral School, Ft. Lauderdale, Fla.*)

Integration? Yes, if . . . *Volta Rev.* Feb., 1959. 61:2:59-62.

Based on personal observations and a recent study of 61 deaf and hard of hearing children in the regular classroom, this paper states the author's reasons for believing that integration of deaf and normal hearing pupils is the better arrangement for many deaf children. Factors that influence the selection of deaf children for integrated programs, qualifications of the teacher, and the need for flexibility in determining age at which integration should occur and factors in evaluating the success of integrated programs are discussed. The child who can integrate most readily needs skill in speechreading and oral language, must be socially well adjusted, and have an IQ within the average range. Success is not affected by the degree of loss. Properly screened for admittance, the deaf child can succeed in an integrated class that has teacher guidance.

DEAF-BLIND—EMPLOYMENT

307. Salmon, Peter J. (*57 Willoughby St., Brooklyn 1, N.Y.*)

Vocational rehabilitation of deaf-blind persons, by Peter J. Salmon and Herbert Rusalem. *New Outlook for the Blind*. Feb., 1959. 53:2:47-54.

An adaptation of an address delivered at the annual convention of the National Rehabilitation Association in 1958, discussing data obtained from a two-year research and demonstration project in services to deaf-blind adults from 1956 to 1958 that was sponsored by the U.S. Office of Vocational Rehabilitation. Some concepts regarding vocational rehabilitation of the deaf-blind are discussed for the benefit of professional counselors. Vocational diagnosis, counseling, prevocational training, and vocational training and placement are covered. Vocational rehabilitation of the deaf-blind does not differ in approach from the basic processes employed with all disabled persons; differences lie in the emphasis of certain aspects of counseling and guidance and in some special approaches made necessary because of the deaf-blind person's particular limitations. Qualifications seemingly possessed by deaf-blind persons who have been employed successfully in industry are listed. Recommendations are offered for the expansion of vocational services for this group of the handicapped.

DENTAL SERVICES

308. Rusk, Howard A. (*400 E. 34th St., New York 16, N.Y.*)

The dentist and vocational rehabilitation, by Howard A. Rusk and Samuel S. Herman. *J. Dental Med.* Jan., 1959. 14:1:35-40.

Rehabilitation is defined as "an area of specialized activity within a number of professional disciplines." The authors describe the state-federal program of vocational rehabilitation, its organization and administration, eligibility of disabled persons for types of services available, and indications for dental services under the program. Efforts to meet the needs of cerebral palsied children and young adults for dental care have been given impetus through the interest of voluntary organizations. Training fellowships are available for dentists interested in this field. Dr. Manuel M. Album has supervised a film on the subject. Another outstanding example of a program of dental care is the one established at Abilities, Inc., a firm employing only severely disabled persons. A brief résumé is given of the continuing expansion of rehabilitation services.

DRIVERS

309. Pappanikou, A. J. (*Pineland Hosp. and Training Center, Pownal, Me.*)

Driver education; asset or liability? by A. J. Pappanikou and Peter W. Bowman. *Am. J. Mental Deficiency*. Jan., 1959. 63:4:662-666.

A report of a driver training program instituted at Pineland Hospital and Training Center, a residential school for the mentally retarded. Arguments pro and con for establishing such a program are given. Administrative details of the program and aims of the curriculum are outlined; the value of teaching highway safety to drivers and pedestrians alike is stressed. The majority of objections to the program from both lay and professional persons centered about the intellectual potential of the students.

HARD OF HEARING—EQUIPMENT

310. Siegenthaler, Bruce M. (*Speech and Hearing Clinic, Pa. State Univ., University Park, Pa.*)

The use of hearing aids by public school children. *A.M.A. Arch. Otolaryngology*. Sept., 1958. 68:3:367-371.

Reviews some of the literature on incidence of hearing aid use by school children and the amount of acoustic gain for speech reception threshold. Data from clinical records of school children seen at the Pennsylvania State University Speech and Hearing Center are also included. Average gain among the Center County, Pa., children for whom aids were indicated was about a 60 percent reduction in hearing loss as a result of wearing hearing aids. However the difference between the proportion of children for whom aids were recommended and the number of children wearing aids in the Center County schools illustrates the difficulties in providing every child who needs acoustic help with the assistance he needs.

HEART DISEASE

311. Neu, Harold N. (*Creighton Memorial St. Joseph's Hosp., Omaha, Neb.*)

Rehabilitation of the cardiac patient. *Geriatrics*. Oct., 1958. 13:10:640-646.

Rehabilitation for cardiac patients has not been as widely applied as for patients with poliomyelitis, orthopedic, or neurologic diseases. Since elaborate facilities are not necessary for such rehabilitation and since responsibility usually rests with the physician caring for the cardiac patient, Dr. Neu points out what may be done to alleviate the patient's anxiety and assure him of the necessary care. Misconceptions in the management of these patients are discussed.

HEART DISEASE—EMPLOYMENT

312. Sparkman, Donal R. (*900 Boylston Ave., Seattle 4, Wash.*)

Industrial compensation aspects of heart disease, by Donal R. Sparkman and Gordon G. Bergy. *Indust. Med. and Surg.* Feb., 1959. 28:2:60-66.

In same issue: Climbing up stairs, Bert Hanman. p. 67-68.

Because early workmen's compensation laws did not conceive of heart disease as an industrial injury, the problem of cardiac compensation poses special difficulties. A program for improving application of the Workmen's Compensation Act in the State of Washington has been in effect for the past five years. Through formulation of medical criteria for the relationship of stress to heart disease, use of a panel of internists to evaluate all cardiac claims, and improvement of rehabilitative efforts toward the injured worker, the problem has been attacked in a constructive manner. Methods outlined here would be applicable in many states.

Mr. Hanman, consultant to John Hancock Mutual Life Insurance Co., Boston, and an authority on physical stress in relation to job capacities, reports results of a survey on actual time consumed in climbing stairs by slow, average, and fast climbers. The study is based on observations of Boston subway crowds. It is his belief that less time is consumed in stair climbing than previously believed and that many persons with medical restrictions on their climbing could safely climb more than their physicians allow.

HEART DISEASE—NURSING CARE

313. Denham, Margaret (*Heart Disease Control Program, U.S. Public Health Service, Washington 25, D.C.*)

Nursing services outside the hospital for cardiovascular disease patients, by Margaret Denham, Sidney Abraham, and L. M. Graves. *Public Health Rep.* Jan., 1959. 74:1: 21-27.

Data from a one-month study of public health nursing services provided in Memphis and Shelby County, Tenn., for nonhospitalized patients with diseases of the heart and blood vessels reveal that these patients receive many nursing services specifically related to their diagnoses and significant to their welfare. The completed study shows only an analysis of services as recorded by nurses during the study month; it cannot be used as an index of the status of all patients in the community with cardiovascular disease. Findings have implications for nursing educators preparing student nurses on service to cardiovascular patients in the home. The study can also serve as the basis for the development of an inservice plan for staff education in cardiovascular disease control.

HEREDITY

See 287.

HOBBIES

314. Grubbs, Edna (*United Cerebral Palsy of Greater Minneapolis, 100 W. Franklin St., Minneapolis, Minn.*)

Finger painting; a creative activity for the cerebral palsied child. *Cerebral Palsy Rev.* Nov.-Dec., 1958. 19: 6:8, 13-14.

Describes technics of finger painting, equipment needed, the ingredients for homemade finger paint, and methods of teaching children to use this medium. Therapeutic benefits and personal satisfactions that this type of activity offers the cerebral palsied child are discussed.

HOSPITALS

315. Littauer, David (*216 S. Kingshighway Blvd., St. Louis 10, Mo.*)

Organizing and operating a chronic disease unit in a general hospital, by David Littauer, Franz U. Steinberg, and David A. Gee. *Hospitals*. Feb. 1 & 16, 1959. 33:3 & 4. 2 pts.

An extended report on the Chronic Disease Division of the Jewish Hospital of St. Louis, types of patients served on the unit, its physical facilities, staffing, and administration procedures, the program of care, costs of operation, and relation of the unit to other medical care programs of the hospital. Experiences of the unit have borne out the soundness of the recommendation made by the Commission on Chronic Illness that long-term care units belong in general hospitals. Advantages and weaknesses of the program are discussed.

JUVENILE DELINQUENCY

See 348.

MENTAL DEFECTIVES—ILLINOIS

316. Illinois. Commission on Mental Retardation

Report of the . . . Springfield, The Commission, 1958. 56 p.

A report of the findings and recommendations of the Commission on Mental Retardation appointed by the Gov-

ABSTRACTS

ernor of Illinois to study needs of mentally retarded persons in the state and make suggestions for a statewide program in their behalf. A two-fold program of rehabilitation services for the mentally retarded and research aimed at prevention of the condition is needed. A study of the current status of institutions, local public school programs, other community services, and research efforts was conducted. Among recommendations offered were those pertaining to legislation, teacher training facilities, expansion of institutions, and stronger programs of vocational rehabilitation.

Available from Lawrence A. Bussard, Exec. Secretary, Commission on Mental Retardation, 401 State Office Bldg., Springfield, Ill.

MENTAL DEFECTIVES—PARENT EDUCATION

317. U. S. Children's Bureau

The mentally retarded child at home; a manual for parents, by Laura L. Dittmann. Washington, D.C., Govt. Print. Off., 1959. 99 p. illus. (*Children's Bur. publ. no. 374-1959*)

The main portion of the manual is devoted to the needs of the infant and preschool child who are mentally retarded. Practical suggestions are given on home care and training of the child, on family attitudes and their influence on the child's development, on developing independence in the child, and on the retarded child's school days and adjustment in adolescence. The manual should meet a long-felt need for a concrete guide in helping these children grow and develop. Emphasis throughout is on ways in which the retarded child resembles the normal child in his needs. The author consulted with authorities in the medical, educational, psychological, and social work fields, as well as with ancillary professions providing various therapies. An added section lists suggested toys and equipment for home play. Publication is indexed.

Available from U. S. Superintendent of Documents, Washington 25, D. C., at 35c a copy.

MENTAL DEFECTIVES—SPECIAL EDUCATION

See 299; 309; 341.

MENTAL DEFECTIVES—SPEECH CORRECTION

See 301.

MENTAL DISEASE—BIBLIOGRAPHY

318. American Psychiatric Association. Architecture Study Project

Selected reading lists on mental hospitals, 1948-1958; Charles E. Goshen, ed. Washington, D.C., The Assn. (1958). 69 p.

Selected references are taken from hospital, architectural, and psychiatric literature up to 1958 and are classified by subjects; entries are not annotated. Sections of special interest to those in the rehabilitation field are those covering institutions for mental defectives, children's residential units, rehabilitation services, ancillary therapies, follow-up care, and hospital equipment and services. Includes a list of publications from which references were selected, with their addresses.

Available from American Psychiatric Assn., 1700 18th St., N.W., Washington 9, D.C., at \$1.00 a copy.

MULTIPLE SCLEROSIS—DIAGNOSIS

319. Poser, Charles M. (Univ. of Kansas Med. Center, Kansas City 12, Kan.)

Cerebrospinal fluid free cholesterol as index of activity of multiple sclerosis and allied diseases, by Charles M. Poser, George L. Curran, and Firmin Snodell. *A.M.A. Arch. Neurol. & Psychiatry*. Sept., 1958. 80:3:304-313.

Lack of objective criteria for evaluating the degree of activity of the demyelinating process in patients with multiple sclerosis led to the investigation reported here. The possibility that changes in the composition of cholesterol fractions in the cerebrospinal fluid might reflect biochemical alteration in multiple sclerosis and other demyelinating diseases was considered. Findings of the study would seem to indicate that the presence of free cholesterol found in the spinal fluid may be useful as an objective index of activity of the demyelinating process. Experimental methods of the study and results are discussed.

NEUROLOGY

320. Arieff, Alex J. (670 N. Michigan Ave., Chicago 11, Ill.)

Neurologic and orthopaedic crossroads, by Alex J. Arieff and William A. Larmon. *Quart. Bul.*, Northwestern Univ. Med. School. Fall, 1958. 32:3:204-211.

Many patients with neurologic and/or psychiatric conditions present themselves to the orthopedic surgeon for treatment. The authors report here on some patients seen first by the orthopedic surgeon but treated jointly by the neurologist and orthopedic surgeon. A large proportion of such patients complain mainly of pain or weakness. Neurologic and orthopedic study and collaboration were effective in achieving good results in these patients.

321. Forster, Francis M. (Georgetown Univ. Med. Center, Washington 7, D.C.)

Cortical sensory defects causing disability, by Francis M. Forster and Charles D. Shields. *Arch. Phys. Med. and Rehab.* Feb., 1959. 40:2:56-61.

The importance of sensory defects in producing disability is stressed; in patients with central nervous system lesions, it is particularly necessary to carry out a careful sensory examination. Technics of the sensory examination and rehabilitation measures directed toward alleviation of sensory defects are discussed. The retraining technic is basically one of conditioning the patient.

See also 286.

OCCUPATIONAL THERAPY—EQUIPMENT

322. Smith, Philip A. (Ann Arbor V.A. Hosp., Ann Arbor, Mich.)

Psychological attributes of occupational therapy crafts, by Philip A. Smith, Helen S. Barrows, and James N. Whitney. *Am. J. Occupational Ther.* Jan.-Feb., 1959. 13:1:16-21, 25-26.

A report of a study to formulate some basic, empirically derived information on the psychological properties of occupational therapy crafts as viewed by persons with different rehabilitation aims. An attempt was made also to grade and classify crafts according to the meaning or connotation they convey. An objective scale employing de-

scriptive adjectives was used in rating a number of common crafts; three different groups of hospital patients and a group of occupational therapists participated in the study. Results suggested that crafts can be described along a series of dimensions reflecting value, strength, and difficulty as well as by some lesser more specific attributes. While differing attitudes were found among the groups of hospitalized patients, differences were not sufficient to indicate that diagnostic classification of patients should override individual consideration in the choice of crafts or selection of treatment goals.

OLD AGE—MEDICAL TREATMENT

323. Schaeffer, Joseph A. (8811 Hamilton Ave., Detroit 2, Mich.)

Physical medicine and rehabilitation as related to retirement. *Indust. Med. and Surg.* Feb., 1959. 28:2: 86-88.

The Director of the Rehabilitation Institute of Metropolitan Detroit believes that economic considerations often keep retired persons from seeking medical aid before chronic disease strikes. Steps should be taken to insure adequate medical care from the standpoint of both treatment and prevention for geriatric patients. The family physician, usually the first to see the patient, should become more familiar with the technics and philosophy of geriatric care and possibilities for rehabilitation. Care and treatment should go beyond mere physical restoration.

OLD AGE—SURVEYS

324. International Association of Gerontology. Social Science Research Committee (European Section)

The need for cross-national surveys of old age; report of a conference at Copenhagen, October 19-23, 1956. . . . Ann Arbor, Univ. of Michigan, Div. of Gerontology, n.d. 77 p. tabs., diag.

Contents: Introduction: The case for social research as a guide to the formulation of policy (based on a paper by R. M. Titmuss).—Reports of working groups; suggestions for comparative cross-national research on (1) Pensions, assistance, and levels of living, (2) Work and retirement, (3) Family and institutional care.—Some examples of surveys undertaken or needed: Income surveys, Brian Abel-Smith.—Budgetary surveys, Ugo M. Colombo.—Living conditions, Rigmor Skade.—Family relationships, Peter Townsend.—Pensions and retirement, Jørgen Dich.—Research on employment, F. Le Gros Clark.—Causes of institutionalization, Angelo Pagani.—Costs of institutional versus home care, Henning Friis.—Socio-medical surveys, R. J. van Zonneveld.

Papers considered problems inherent in such surveys, types of information obtained and its usefulness, and the need for comprehensive information on problems of the aged.

The report was reproduced for distribution in the United States by the Division of Gerontology, University of Michigan, 1510 Rackham Bldg., Ann Arbor, Mich. Single copies available at \$2.00.

OSTEOPATHY

325. American Osteopathic Association (212 E. Ohio St., Chicago 11, Ill.)

APRIL, 1959, Vol. 20, No. 4

Osteopathy and rehabilitation; a panel discussion; J. M. Andrews, Moderator. *J. Am. Osteopathic Assn.* Feb., 1959. 58:6:341-348.

Panel members: Henry Redkey, Robert B. Thomas, Philip J. Rasch, and Hugh B. Speir.

In this Symposium presented at the 62nd Annual Convention of the Association in 1958, authorities in the fields of osteopathy, physical medicine, and rehabilitation spoke on the relation of each to preventive medicine and public health. Mr. Speir of the U.S. Dept. of Health, Education, and Welfare discussed Public Health Service research grants for rehabilitation facilities. Dr. Rasch's subject was the role of research in an osteopathic institution; Mr. Redkey discussed general concepts of rehabilitation. Dr. Thomas spoke briefly on preventive medicine and the responsibilities of the osteopathic physician in relation to rehabilitation. A general question and answer period following the symposium is reported briefly.

PARALYSIS AGITANS—MEDICAL TREATMENT

326. Meredith, John M. (1200 E. Broad St., Richmond 19, Va.)

Chemopallidectomy for relief of Parkinson's disease; with remarks on selection of cases for operation and improvements in surgical technique. *J. S. Carolina Med. Assn.* Oct., 1958. 54:10:357-363.

A brief historical review of medical and surgical efforts that have been carried out in an attempt to relieve tremor and rigidity in Parkinson's disease, with a description of surgical technics currently being used. The majority opinion today in neurosurgical clinics (in this country, at least) favors either chemopallidectomy by alcohol injection into the basal ganglia or the pallidotomy knife-cutting technic of Dr. McKinney (Ft. Worth, Tex.). It is emphasized, however, that selection of such patients for surgery must be made with care. General practitioners should now consider neurosurgical intervention as a possibility in the treatment of selected cases among patients with moderately advanced parkinsonism.

PARAPLEGIA

327. Kent, Herbert (Pasteur Med. Bldg., 1111 N. Lee St., Oklahoma City, Okla.)

Potential for rehabilitation in quadriplegic teen-agers. *J. Am. Med. Assn.* Feb. 21, 1959. 169:8:817-824.

With increasing accident rates, spinal cord injuries are becoming more prevalent and severe disabilities are more often seen in the teen-age group with damage at higher cord levels. However these patients have a greater potential for rehabilitation than adults; prompt comprehensive physical medicine and rehabilitation services can make it possible for them to learn to live with their disability. Findings from a study of 12 patients with quadriplegia are presented; three detailed case histories illustrate the problems encountered and the extent of recovery, educational attainments, and vocational prospects. Psychology of the teen-ager is discussed in relation to reactions to this type of disability.

PARAPLEGIA—EQUIPMENT

See 350.

ABSTRACTS

PARENT EDUCATION

328. Barckley, Virginia (*Pennsylvania Dept. of Health, Harrisburg, Pa.*)

Helping the handicapped child achieve emotional maturity, by Virginia Barckley and Everett I. Campbell. *Am. J. Nursing*. Mar., 1959. 59:3:376-379.

Discusses ways in which the nurse can aid parents of the handicapped child in developing constructive attitudes toward the child's disability, various reactions of the child to his handicap, and the importance of the proper response by the nurse to the child's needs. Rigid adherence to rules of nursing should give way to human understanding, tolerance, and lack of condemnation for reactions of parents and the handicapped child.

329. Carr, Lela B. (*Ill. Dept. of Public Welfare, State Office Bldg., 400 S. Spring St., Springfield, Ill.*)

Problems confronting parents of children with handicaps. *Exceptional Children*. Feb., 1959. 25:6:251-255.

Parents should be aware of the basic needs that all children have; the handicapped child does not differ from normal children in this respect. Attitudes of parents can influence the healthy development of the child; it is their duty to develop emotional balance and acquire the knowledge that will help them understand the many problems that handicaps pose.

POLIOMYELITIS

330. Agerholm, Margaret (*Nuffield Dept. of Orthopaedic Surgery, Univ. of Oxford, England*)

Respiratory paralysis in poliomyelitis. *Physiotherapy*. Feb., 1959. 45:2:29-36.

Congress Lecture.

Although the consequences of respiratory paralysis in poliomyelitis are more unpleasant and sometimes more dangerous than those in locomotor paralysis, basic problems of management hinge on retraining or substituting for weakened muscles. Incidence of poliomyelitis in England, classification of respiratory complications, and treatment of bulbar, spinal, and bulbospinal cases are discussed briefly. The role of the physical therapist in the treatment of respiratory paralysis involves three main responsibilities: 1) to maintain mobility of the chest wall, 2) to provide a substitute cough, and 3) to train the respiratory muscles and help in weaning the patient from mechanical aids. The writer stresses the need to carry on locomotor rehabilitation concurrently with respiratory rehabilitation.

POLIOMYELITIS—MEDICAL TREATMENT

331. Sweet, Avron Y. (*Mt. Sinai Hosp., Fifth Ave. at 100th St., New York 29, N.Y.*)

Peculiarities of symptomatology in chronic poliomyelitis patients. *J. Mt. Sinai Hosp.* Sept., 1958. 25:5:405-410.

Severe and extensive neuronal damage caused by poliomyelitis virus often results in the failure of chronic poliomyelitis patients to respond to illness in recognized ways. The occurrence of intercurrent disease in these patients may go unnoticed because of absence of pain or fever in situations where they are normally present. Because of difficulties involved in reaching the proper diagnosis, patients should be hospitalized promptly when the cause of

intercurrent illness is not immediately apparent. Two case histories are presented.

PSYCHOLOGY

332. Nadler, Eugene B. (*Highland View Cuyahoga County Hosp., Cleveland, Ohio*)

A factor analytic study of motivational patterns in a sheltered workshop, by Eugene B. Nadler and Franklin C. Shontz. *Personnel and Guidance J.* Feb., 1959. 37:6:444-450.

A discussion of the role of motivation in rehabilitation; the concept of motivation has referred variously to the patient's underlying needs, his acquiescence to rehabilitation demands, his adjustment to severe illness, and at times to his moral character. A common assumption has been that motivation has a unitary character. The authors offer some theoretical arguments to this concept; the present study was based on the belief that an individual's reaction to serious disability and his utilization of rehabilitation services represent more general and relatively enduring modes of response. The empirical demonstration of multiple patterns of behavior in a sheltered workshop setting and a preliminary description of some of the patterns were undertaken in the study. Reactions to physical disability and utilization of rehabilitation services are held to be largely understandable in the light of previously existing personality factors. Analysis of the interperson correlations of 28 severely disabled persons led to the isolation of 6 factors; the relationship of these to certain external criteria is presented. Implications of the study for research, diagnosis, prognosis, and treatment are discussed briefly.

333. Vineberg, Shalom E. (*V.A. Hosp., Oteen, N.C.*)

Concerning job readiness. *J. Rehab.* Nov.-Dec., 1958. 24:6:9-10, 23.

In same issue: Communication problems of the counselor, Warren A. Peterson. p. 11-13, 22.

A discussion of some causes of what the author terms "work unreadiness" in patients with chronic illness or disability. Previous attitudes toward work before illness occurred often hinder efforts at vocational rehabilitation; these attitudes are molded by the social nature of occupations and group membership. Especially among unskilled workers, there appears to be lack of desire to return to work. These aspects of motivation are not always considered by the rehabilitation counselor dealing with the indifferent, unresponsive client. Rehabilitation involves more than the estimation of skills and placement on the job.

Mr. Peterson (Community Studies, Inc., 724 Railway Exchange Bldg., Kansas City 6, Mo.) identifies and describes communication problems between professional personnel and patients in the rehabilitation setting. Observations are based on experience with the Kansas City Rehabilitation Experiment. Problems appeared to be related to social class of the patient, patient demoralization, patient misunderstanding of social and psychological therapy, professional specialization, and passivity on the part of the patient.

334. Woods, Sister Frances Jerome (*Our Lady of the Lake Coll., San Antonio 7, Tex.*)

The choice-rejection status of speech-defective children, by Sister Frances Jerome Woods and Sister Mary Arthur Carrow. *Exceptional Children*. Feb., 1959. 25:6:279-283.

There is an assumption that the child with a speech defect is not as readily accepted by his peers in the school situation as is the child who is not handicapped. Previous studies testing the hypothesis have not been conclusive. This study of the social acceptance of speech defective children compared the choice-rejection score of 96 children with speech defects with their 1,428 peers in the elementary school. Choice-rejection scores were significantly lower for speech defective children on the criteria of play and friendship but not on that of work. The nature of the classroom environment may account for this finding. At this particular age, stutterers apparently are better accepted than children with articulatory disorders. Within limitations of the study it was found that certain types of speech defects affect the status of the child in his relationship with classroom peers.

READING

See 346.

REHABILITATION

335. Gingras, G. (6265 Hudson Rd., Montreal, Que., Canada)

Rehabilitation; a universal problem. *Med. Services J. (Canada)*. July-Aug., 1958. 14:7:493-497.

In an address presented to the Newfoundland Division of the Canadian Medical Association in 1958, Dr. Gingras, Executive Director of the Rehabilitation Institute of Montreal, defines the broadened concept of rehabilitation and the medical, economic, and sociological factors responsible for increased interest in the provision of rehabilitation services. What is needed specifically in the field of medical rehabilitation are well-coordinated, comprehensive programs offered in general hospitals and rehabilitation centers.

336. Knapp, Miland E. (Elizabeth Kenny Institute, 1800 Chicago Ave., Minneapolis 4, Minn.)

Physical rehabilitation as related to industrial compensation. *Minn. Med.* Sept., 1958. 41:9:633-638.

A discussion of the philosophy of rehabilitation, types of rehabilitation programs needed by persons with varying degrees of disability, types of rehabilitation facilities, procedures employed at the Elizabeth Kenny Institute, and the place of sheltered workshops in the rehabilitation program. Some conditions commonly requiring physical rehabilitation are discussed briefly, as well as the possibilities for rehabilitation in each. This address was presented to the American Association of State Compensation Insurance Funds and the International Association of Industrial Boards and Commissions in 1957.

REHABILITATION—PERSONNEL

See 292; 349.

REHABILITATION—PROGRAMS

337. Maas, Melvin J. (President's Comm. on Employment of the Physically Handicapped, 7133 Dept. of Labor Bldg., Washington 25, D.C.)

Present and future horizons for the international rehabilitation of the disabled. *Military Med.* Feb., 1959. 124:2:98-101.

Whatever success the United States achieves in the international field can come, the author believes, only after careful reappraisal of our methods of rehabilitating the disabled and returning them to productive work. The Armed Services should examine their outdated physical requirements for service; many jobs in that area could be performed by handicapped servicemen, thus helping to maintain our national strength. Our rehabilitation programs can serve to restore faith in American democracy among the people of other countries.

338. World Health Organization

Expert Committee on Medical Rehabilitation; first report. Geneva, WHO, 1958. 52 p. tabs. (Technical rep. ser. no. 158)

Containing the collective views of an international group of experts in the field of rehabilitation, the report reviews basic principles and practices of the medical rehabilitation of physical handicaps. Discussed are: the concept of medical rehabilitation in relation to social and preventive medicine, magnitude of the problem and the present inadequacy of statistical information, how the needs of the handicapped can be met, education and training of medical and allied personnel in medical rehabilitation, education of the public, and organization and program planning to provide services. Appendixes include selected data on the prevalence of physical impairment in various countries, a discussion of psychological aspects of rehabilitation, and the status of rehabilitation efforts in less developed countries. Recommendations are made for further study and action on an international scale.

Available in the U.S. from Columbia University Press, Internatl. Documents Service, 2960 Broadway, New York 27, N.Y., at 60c a copy.

REHABILITATION—SURVEYS— GREAT BRITAIN

339. National Council of Social Service (Gt. Britain)

Help for the handicapped; an enquiry into the opportunities of the voluntary services. London, The Council, 1958. 114 p. (Ref. no. 528)

A report of a survey sponsored by the National Council of Social Service and the Central Council for the Care of Cripples and concerned with the problems of organization and development of voluntary organizations in Great Britain working in the interests of the disabled. Director of the survey and author of this report is Dr. J. H. Nicholson. Also studied was the relation of voluntary organizations with statutory authorities, both local and central. Primarily concerned with organizations and services for the physically handicapped, the report deals only briefly with services for the aged and for children. Chapters cover rehabilitation and training, employment, social welfare, residential care, and coordination of services; recommendations for improvement and coordination of services are summarized at the conclusion of respective chapters. Chapter 2 sums up findings of the study as a whole on matters of basic policies and practices. (For a digest of Chapter 5, on social welfare, see #293 this issue of *Rehab. Lit.*) For all those interested in the rehabilitation concept and philosophy and the role of the voluntary organization in rehabilitation of the handicapped, this report opens many avenues of thought.

Available in the U.S. from Albert J. Phiebig, P.O. Box

ABSTRACTS

352, White Plains, N.Y., at \$1.35 a copy. Also available from The National Council of Social Service, 26 Bedford Sq., London, W.C. 1, England, at 7s 6d a copy.

340. Scottish Council of Social Service

The handicapped person; a report on the provision of welfare services for handicapped persons in Scotland, by James F. Montgomerie. Edinburgh, The Council, 1958. 92 p. tabs.

Reports findings and recommendations of a survey of welfare services for the disabled in Scotland; the efforts of voluntary organizations, local authorities, and government departments were studied over a two-year period by Mr. Montgomerie. General services for all the handicapped and services related specifically to various categories of disability are discussed, as well as cooperative efforts of voluntary and governmental agencies. A summary of recommendations for improvement of services is included. Statistical tables, a listing of residential special schools, a list of voluntary organizations working in various areas of welfare for the handicapped, statistics on the numbers of the handicapped in different categories, and on sheltered workshops and employment status of the handicapped are found in the appendix. It is noted that the report represents the author's opinions and recommendations only, but its comprehensive nature is of value to those interested in identifying unmet needs of the handicapped.

Available from Scottish Council of Social Service, 10 Alva St., Edinburgh 2, Scotland, at 5s (90c) a copy.

REHABILITATION—SURVEYS—TEXAS

See 289.

RELIGION

341. National Council of the Churches of Christ in the U.S.A.

The mentally retarded and the church, by Marion O. Lerrigo. New York, The Council (1959). 16 p.

Expanded from an article in: *Internatl. J. Religious Education*. Dec., 1958.

Beginning with a brief explanation of what constitutes mental retardation and how children so affected can be helped, Dr. Lerrigo then discusses ways in which the church can minister to this group in the community. The church can serve as interpreter of the mentally retarded, their needs, and the causes of mental retardation. Special church school programs could be developed along the lines of four successfully operating programs in Evanston, Ill., Minneapolis, St. Paul, and Philadelphia. Interdenominational church schools are one solution for the provision of services. A report on a laboratory school program conducted for two weeks at Faribault, Minn., is given in the appendix.

Available from Natl. Council of the Churches of Christ in the U.S.A., Office of Publication and Distribution, 120 E. 23rd St., New York 10, N.Y., at 25c a copy.

RESPIRATION

342. Plum, Fred (*Div. of Neurology, Univ. of Washington School of Med., Seattle 5, Wash.*)

Abnormalities in central regulation of respiration in acute and convalescent poliomyelitis, by Fred Plum and

August G. Swanson. *A.M.A. Arch. Neurol. & Psychiatry*. Sept., 1958. 80:3:267-285.

Presents clinical and physiological findings on 20 patients who developed centrogenic respiratory disturbances due to acute poliomyelitis. Pathological material was available for correlation in two of the patients. Abnormalities are described in the central control of respiration that persisted beyond the acute phase of illness to produce problems in the management of convalescence. Depressant drugs were found to accelerate deterioration of central respiratory control in acute poliomyelitis. These findings in central respiratory failure in poliomyelitis suggest that an intrinsic and sensitive function of the medullary respiratory center is to establish the rhythm of breathing.

See also 330.

SHELTERED WORKSHOPS

See 332.

SOCIAL SECURITY

343. Pohlmann, Kenneth E. (*907 15th St., N.W., Washington 5, D.C.*)

Social insurance and rehabilitation. *J. Rehab.* Nov.-Dec., 1958. 24:6:4-6, 41-43.

Traces the growth of social insurance in the United States, the first public scheme of which was workmen's compensation. The parallel development of the state-federal vocational rehabilitation program had an impact on all phases of social welfare. Workmen's compensation laws, however, have fallen behind the times and need a general overhauling if they are to meet the needs of physically handicapped persons. With the addition of disability benefits to the Social Security Act, rehabilitation is becoming increasingly important as an aspect of social insurance. Utilization of state vocational rehabilitation agencies and public welfare departments to review applications and determine eligibility of claims poses major social welfare problems for both groups. How they meet the challenge may affect the future of social insurance, public assistance, and rehabilitation services.

SPECIAL EDUCATION

344. Fenton, Joseph (*N.Y. State Education Dept., Albany, N.Y.*)

The changing picture in the education of children with crippling conditions and special health problems, by Joseph Fenton and Frances P. Connor. *Exceptional Children*. Feb., 1959. 25:6:256-262, 277-278.

Changing trends in medical diagnoses of children served in special education programs and in their special health problems, plus the progress made in science, medicine, education, and rehabilitation, have given rise to new demands in the planning and management of special education programs. There is a growing tendency away from the organization of special classes on the basis of the medical diagnosis. The changing picture in special education programs has implications for teacher training and placement, if needs of a changing school population are to be met. The authors discuss how some of these problems have been attacked.

See also 290.

SPECIAL EDUCATION—NEW YORK

345. Council for Exceptional Children. Hunter College Chapter

Ten years of progress with exceptional children, 1947-1957. New York, Hunter Coll. Chapter, Council for Exceptional Children (1959). 88 p. illus. (*Education Special*. 1957. 10:1)

In this 10th anniversary issue of *Education Special*, the annual publication of the Hunter College Chapter, accomplishments of the Chapter since its founding are reviewed. Dr. Romaine P. Mackie discusses briefly trends and advances in special education programs in the United States; Dr. Anthony Pelone reports on legislative advances in New York State in this area. Dr. Howard A. Rusk contributed an overview of rehabilitation and special education. Other articles included are: New approaches in special education of the gifted, David G. Salten.—A decade of progress in rehabilitation, Sol L. Warren.—Rehabilitation of the disabled child; some psychological implications, Selma J. Glick.—New trends in differential diagnosis; the child with communication disorders, Shulamith Kastein.—Progress in education of the blind, Paul C. Mitchell.—A symposium: New approaches in special education of the exceptional child (articles on educational problems of children in various diagnostic categories, by authorities in the field).

Available from Hunter College Chapter, Council for Exceptional Children, P.O. Box 432, 695 Park Ave., New York 21, N.Y., at \$1.00 a copy.

SPEECH CORRECTION

346. Mawhinney, Clara K. (1203 N. Orange St., Peoria, Ill.)

To isolate or not to isolate in speech therapy. *Exceptional Children*. Feb., 1959. 25:6:247-250, 255.

A discussion of a controversial issue between teachers of reading and speech therapists; disagreement has arisen because speech therapists have been told that isolating sounds in speech therapy would interfere with certain methods of teaching, especially where reading is concerned. Authorities have proved, however, that any sound can be produced alone; there are many children who need practice on individual sounds. Isolation of sound is a necessary part of correcting articulatory speech defects. Where auditory perception of sound is lacking, isolation should be used to aid the child in identifying and recognizing corrected sounds.

See also 290; 334.

SPEECH CORRECTION—PERSONNEL

347. Summers, Raymond (1330 W. Michigan Ave., Indianapolis, Ind.)

Private practice of public school therapists in Indiana. *J. Speech and Hear. Disorders*. Feb., 1959. 24:1:51-54.

Data from a survey of public school speech and hearing therapists in Indiana revealed that 32 percent were also engaged in private practice. Information on case loads, fees charged, professional affiliations, age, frequency of therapy sessions, and diagnoses of private cases is included. Attitudes of school administrators toward private

practice by public school therapists place certain restrictions on such practice. Because the study was not considered comprehensive, it leaves unanswered many questions of interest to those in the profession in regard to ethics of the situation, problems of selection of case loads, and proper administrative organization of programs.

SURGERY (PLASTIC)

348. Ogden, D. A.

Use of surgical rehabilitation in young delinquents. *Brit. Med. J.* Feb. 14, 1959. 5119:432-434.

Physical deformities and disabilities left uncorrected in childhood have been found to be a source of resentment or chronic irritation to young delinquents. In 1950 a pilot experiment was begun in an English penal institution to treat selected cases of physical defects by surgical means. It was believed that the psychological effects of remedying defects would be useful in combatting delinquency. Results have been encouraging in a similar project conducted at the Borstal Institution, Portland. It is not claimed that remedial surgery in itself is a cure for delinquency but it helps the individual develop positive character traits.

TUBERCULOSIS

See 288.

VOCATIONAL GUIDANCE

349. Cromwell, Florence S. (5201 Beverly Blvd., Los Angeles 4, Calif.)

A procedure for prevocational evaluation. *Am. J. Occupational Ther.* Jan.-Feb., 1959. 13:1:1-4.

Because of their professional training as observers and interpreters of the performance of handicapped persons, occupational therapists are ideally suited to the role of examiner in prevocational evaluation. The testing of daily living skills, physical tolerance, manual dexterity and coordination, prevocational job sampling and the rating of performance can be carried out by the occupational therapist as part of the rehabilitation team's approach to vocational planning for clients. Guides for the development of a testing program are outlined.

See also 305; 333.

WRITING—EQUIPMENT

350. Huddleston, O. Leonard (Calif. Rehab. Center, 1 Pico Blvd., Santa Monica, Calif.)

The writing device, by O. Leonard Huddleston, William Henderson, and John W. Campbell. *Am. J. Occupational Ther.* Jan.-Feb., 1959. 13:1:11-13.

Another in the series of articles on bracing and equipment developed at the California Rehabilitation Center. The device described is a writing brace designed for patients who do not have the use of either hand but do retain arm motion (quadriplegic patients with a cord injury). Detailed instructions for constructing the brace are included, as well as photographs of the brace in use. A number of patients with complete spinal cord transections of the C-6, C-7, and C-8 variety have used the brace with marked success, being able to put the brace on themselves, replace pens and pencils, and remove the appliance without help.

Events and Comments

New Rehabilitation Center

A COMPLETE REHABILITATION center is to be constructed at the Milwaukee County General Hospital. The center will house all physical restoration, vocational evaluation, psychological, and social services, as well as an associated sheltered workshop. Under the Milwaukee County Institutions and Departments, it will be affiliated with the Marquette University School of Medicine and will be used as a teaching and training center for students and physicians. Dr. Robert W. Boyle, Director of Physical Medicine, will be head of the center.

National Institute on Workshop Standards

IN APRIL, 1958, THE NEED for improving sheltered workshops through the development of acceptable criteria for classification and evaluation was stressed at the National Institute on the Role of the Workshop in Rehabilitation. Subsequently a one-year grant from the Office of Vocational Rehabilitation was obtained and on Sept. 1, 1958, the National Institute on Standards for Classification and Evaluation of Sheltered Workshops was established, with headquarters at 1025 Vermont Ave., N.W., Washington, D.C.

Goals of Workmen's Compensation

"THE BASIC GOALS of workmen's compensation today are:

1. Rehabilitation of the occupationally disabled.
2. Assured, prompt, and adequate indemnity for the occupationally disabled or their survivors.
3. Minimal cost to employers and society commensurate with the above provisions."

—From J. Am. Med. Assn., Oct. 29, 1955, as reprinted in *Special Edition*, Report of the Commission on Medical Care Plans, of J. Am. Med. Assn., Jan. 17, 1959.

Occupational Adjustment of the Deaf Being Studied

A ONE-YEAR RESEARCH project, recently begun at Gallaudet College, was made possible by a grant from the U.S. Office of Vocational Rehabilitation. The project, "Occupational Adjustment of Deaf Persons in Professional, Technical and Managerial Employment," is directed by Alan B. Cramatte, chairman of the college's business administration department.

Plans for Kitchen-Workroom for Older or Handicapped Persons Available

A KITCHEN-WORKROOM designed primarily for older or physically handicapped farm women who must conserve energy is pictured and described in a 12-page booklet, *The Beltsville Kitchen-Workroom with Energy-Saving Features* (Home and Garden bul. no. 60, U.S. Dept. of Agriculture), issued in November, 1958. Its features are designed to save steps and to make reaching easier and reduce lifting of heavy objects. Work centers are provided in the two main areas, a kitchen area with dining space and a workroom area. Detailed working drawings of features are available from the extension agricultural engineer at most state agricultural colleges at a nominal charge. Information on obtaining drawings is available upon writing the Clothing and Housing Research Division, Institute of Home Economics, U.S. Dept. of Agriculture, Beltsville, Md. *Bulletin 60* may be obtained from the Supt. of Documents, U.S. Govt. Printing Office, Washington 25, D.C., at a price of 10 cents.

American Hospital Association Adopts Program and Guide for Care of Chronically Ill and Aged

IN ITS MEETING on February 3, the Board of Trustees of the American Hospital Association voted to approve the Association's *Program for the Care of Chronically Ill and Aged* and the *Guide for State and Local Hospital Committees on Care of Chronically Ill and Aged*. The *Program* and the *Guide* were prepared for the purpose of assisting in the development of programs offering the various services needed by the chronically ill and the aged and of promoting sound programs of health care. These two directives, as approved by the Board, were published in the March 1, 1959, issue of *Hospitals*, p. 55.

Texas Institute to Be Dedicated

IN MAY the Texas Institute for Rehabilitation and Research will be formally dedicated. The Institute was opened officially in January as a part of the Texas Medical Center. Dr. William A. Spencer, chairman, department of rehabilitation, is director. The staff will consist of 240 people, 80 professional. The new building has a 54-bed capacity and an area of 80,000 square feet. There are also laboratories and areas for research studies. The building and equipment cost about \$1,650,000.

Conferences Held in Southern States

THE NEMOURS FOUNDATION over the past 10 years has sponsored 44 Foundation conferences. A conference has been held at least once in each of the 15 southern states, and 8 states have held additional ones. In 11 of the southern states, as an outgrowth of the conferences, a coordinating or state planning committee on services for handicapped children has been organized or is being planned. Scheduled for 1959 are state conferences for West Virginia, Alabama, Mississippi, and Oklahoma. Dr. Alfred R. Shands, Jr., is medical director of the Nemours Foundation and Alfred I. DuPont Institute.

University Summer Courses in Speech and Hearing Listed

THE MARCH, 1959, issue of the *Volta Review* contains a listing of information on courses in the fields of speech and hearing to be given in the summer of 1959 by colleges and universities in the United States.

Rehabilitation Potential of the Chronically Ill in Institutions for the Aged

A SURVEY of the needs and extent of the number of persons in long-term care facilities able to benefit if rehabilitation services were available to them was recently made under the direction of the New York State Health Department's Bureau of Chronic Diseases and Geriatrics. Rehabilitation specialists in five counties cooperated. Of 1,480 patients studied, 362 (median age 81 years) were in proprietary nursing homes, the remainder (median age 75 years) in county home infirmaries. It was considered that 15.1 percent had definite rehabilitation potential, 32.8 percent could benefit slightly, and 52.1 percent were non-rehabilitatable. Age was the most important determining factor, although the extent of disability and multiplicity of disablements were also significant. It was concluded that there is a need for a facility intermediate between a general hospital and a nursing home and with primary emphasis on rehabilitation, that county home infirmaries have sufficient patients with rehabilitation potential to justify the establishment of modest rehabilitation facilities, that nursing homes should provide minimal restorative service, and that patients with significant rehabilitation potential should be transferred from nursing homes to institutions with proper facilities for rehabilitation.

Author Index

- Abel-Smith, Brian, 324
 Abraham, Sidney, 313
 Agerholm, Margaret, 330
 Am. Osteopathic Assn., 325
 Am. Psychiatric Assn. Architecture Study Project, 318
 Arieff, Alex J., 320
 Backus, Ollie, 290
 Barckley, Virginia, 328
 Barrows, Helen S., 322
 Bergy, Gordon G., 312
 Boatner, Maxine Tull, 291
 Bowman, Peter W., 309
 Butters, Shirley S., 287
 Calvert, James J., 300
 Campbell, Everett I., 328
 Campbell, John W., 350
 Carr, Lela B., 329
 Carrow, Sister Mary Arthur, 333
 Clark, A. Bernice, p. 112
 Clark, F. Le Gros, 324
 Clark, Sam Lillard, 286
 Cohen, Elliott M., 292
 Colombo, Ugo M., 324
 Columbus (Ohio) State School, 299
 Connor, Frances P., 344
 Council for Exceptional Children. Hunter College Chapter, 345
 Covalt, Donald A., ed., p. 112
 Cromwell, Florence S., 349
 Curran, George L., 319
 Daley, William T., ed., 290
 Dauterman, William L., 294
 Dell'Acqua, Umberto, 295
 Denham, Margaret, 313
 Dice, Lee R., 287
 Dich, Jorgen, 324
 Dishart, Martin, 298
 Dittmann, Laura L., 317
 Dyson, Hazel R., 287
 Epps, Helen O., 299
 Falls, Harold F., 287
 Fenton, Joseph, 344
 Forster, Francis M., 321
 Fraser, F. Clark, 287
 Friis, Henning, 324
 Frisina, D. Robert, 290
 Froeschels, Emil, 290
 Gee, David A., 315
 Gingras, G., 335
 Glass, Robert, 304
 Glick, Selma J., 345
 Goodgold, Joseph G., p. 112
 Goshen, Charles E., ed., 318
 Graves, L. M., 313
 Grubbs, Edna, 314
 Grynbaum, Bruce B., p. 112
 Hammons, Helen G., ed., 287
 Hanman, Bert, 312
 Heaf, Frederick, 288
 Henderson, William, 350
 Herman, Samuel S., 308
 Herndon, C. Nash, 287
 Hill, Beatrice H., 292
 Huddleston, O. Leonard, 350
 Hunt, Helen V., 290
 Illinois Commission on Mental Retardation, 316
 Internatl. Assn. of Gerontology. Social Science Research Comm. (European Section), 324
 Kallmann, Franz J., 287
 Kastein, Shulamith, 345
 Kent, Herbert, 327
 Knapp, Miland E., 336
 Kraus, Hans, p. 112
 Larmon, William A., 320
 Lehrhoff, Irwin, 296
 Lerrigo, Marion O., 341
 Littauer, David, 315
 Lore, James I., 290
 Maas, Melvin J., 337
 Mackie, Romaine P., 345
 McBride, Earl D., p. 112
 McCammon, Gertrude B., 299
 McCavitt, Martin E., p. 112
 McKusick, Victor A., 287
 Mahoney, Jessie W., p. 112
 Marks, Morton M., p. 112
 Mawhinney, Clara K., 346
 Medl, William T., p. 112
 Meredith, John M., 326
 Mitchell, Paul C., 345
 Montgomerie, James F., 340
 Moore, Paul, 290
 Nadler, Eugene B., 332
 Natl. Council of the Churches of Christ in the U.S.A., 341
 Natl. Council of Social Service (Gt. Brit.), 339
 Neel, James V., 287
 Neu, Harold N., 311
 Nicholson, J. H., 293, 339
 Noll, J. Douglas, 303
 O'Brien, Michael J., 290
 Ogden, D. A., 348
 Oliver, Clarence P., 287
 Pagani, Angelo, 324
 Pappanikou, A. J., 309
 Patterson, Ruth Melcher, ed., 299
 Pelone, Anthony, 345
 Peterson, Warren A., 333
 Plotkin, William H., 301
 Plum, Fred, 342
 Pohlmann, Kenneth E., 343
 Poser, Charles M., 319
 Pritchett, E. Milo, ed., 290
 Ranson, Stephen Walter, 286
 Rasch, Philip J., 325
 Redisch, Walter, p. 112
 Redkey, Henry, 325
 Reed, Sheldon C., 287
 Rubin, Wallace, 297
 Rusale, Herbert, 307
 Rusby, N. Lloyd, 287
 Rusk, Howard A., 308, 345
 Russek, Allen S., p. 112
 St. Onge, Keith R., 300
 Salmon, Peter J., 307
 Salten, David G., 345
 Schaeffer, Joseph A., 323
 Schull, William J., 287
 Scottish Council of Social Service, 340
 Semans, Sarah, p. 99
 Sherman, Dorothy, 303
 Shields, Charles D., 321
 Shontz, Franklin C., 332
 Siegenthaler, Bruce M., 310
 Silson, John E., 292
 Simmons, Queen D., 299
 Skade, Rigmor, 324
 Smith, Philip A., 322
 Snodell, Firmin, 319
 Sparkman, Donal R., 312
 Speir, Hugh B., 325
 Spriestersbach, Duane C., 303
 Steinberg, Franz U., 315
 Summers, Raymond, 347
 Sverdlik, Samuel S., p. 112
 Swanson, August G., 342
 Sweet, Avron Y., 331
 Teegarden, James C., 290
 Texas Legislative Council, 289
 Thomas, Robert B., 325
 Titmuss, R. M., 324
 Townsend, Peter, 324
 United Cerebral Palsy Assn., New York (City), 302
 U. S. Children's Bureau, 317
 Van Wyk, Mary K., 306
 Vineberg, Shalom E., 333
 Warkany, Josef, 287
 Warren, Sol L., 345
 Whitney, James N., 322
 Williams, Harold N., 305
 Witkop, Carl J., Jr., 287
 Woods, Sister Frances Jerome, 334
 World Health Organization, 338
 Zonneveld, R. J. van, 324